Research Aid

USSR: Gross National Product Accounts, 1970

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USSR: GROSS NATIONAL PRODUCT ACCOUNTS, 1970

Summary

1. Calculated according to US national income accounting standards, the gross national product (GNP) of the USSR in 1970 was 381 billion rubles in established prices and 340 billion rubles at factor cost.

2. The valuation in established prices uses official Soviet prices; the valuation at factor cost adjusts these prices up or down to take account of the actual resource cost involved in production. Most of the adjustments take the form of subtracting taxes, adding subsidies, or imputing costs of productive factors not adequately recognized in Soviet accounting procedures. Because taxes, subsidies, and imputations have an uneven effect on the prices of different kinds of economic activity, the distribution of Soviet GNP by sector of origin differs widely depending on the method of valuation.

3. The distribution of Soviet GNP by end use also differs depending on which price basis is used, but not nearly as much.

4. A great deal of effort has gone into unearthing, adjusting, and piecing together Soviet economic data in order to construct the GNP accounts presented in this publication. Nonetheless, this detailed work can only partially compensate for the deficiencies in the official Soviet data. In particular, defense expenditures cannot be unambiguously identified in the "other public sector expenditures," and certain defense activity lies buried in investment and consumption accounts.

Gross National Product	In Established Prices[1]		At Factor Cost[1]	
	Billion Rubles	Percent	Billion Rubles	Percent
By sector of origin	**380.7**	**100.0**	**340.2**	**100.0**
Industry	157.1	41.3	97.5	28.7
Construction	25.4	6.7	30.1	8.8
Agriculture	70.5	18.5	69.4	20.4
Transportation	28.8	7.6	26.5	7.8
Communications	2.8	0.7	2.6	0.8
Trade	16.7	4.4	20.7	6.1
Services	40.6	10.7	74.7	22.0
Military personnel	5.3	1.4	6.6	1.9
Other and unallocated	33.6	8.8	12.3	3.6
By end use	**380.7**	**100.0**	**340.2**	**100.0**
Consumption	**219.6**	**57.7**	**194.6**	**57.2**
Goods	167.4	44.0	115.6	34.0
Services	52.3	13.7	79.0	23.2
Investment	**120.1**	**31.6**	**106.1**	**31.2**
New fixed investment	86.4	22.7	77.0	22.6
Capital repair	18.6	4.9	14.9	4.4
Inventories	15.2	4.0	14.2	4.2
Other public sector expenditures	**40.9**	**10.8**	**39.6**	**11.7**
General administration and miscellaneous services	10.0	2.6	8.7	2.6
Research and development (civilian and military)	9.9	2.6	11.8	3.5
Outlays not elsewhere classified (n.e.c.)—defense, net exports, and unidentified outlays—and statistical discrepancy	21.0	5.5	19.1	5.6

[1] Because of rounding, components may not add to the totals shown.

Note: This publication was prepared by the Office of Economic Research, Central Intelligence Agency. Questions on the publication should be addressed to the Director of Economic Research, Central Intelligence Agency, Washington, D.C. 20505.

Discussion

I. Introduction

5. The Office of Economic Research (OER) of CIA is called upon to make annual estimates of Soviet GNP in rubles, its rate of growth, its size relative to US GNP, and its allocation among consumption, investment, defense, and other end uses. The statistical weights used in these estimates are derived from detailed accounts of GNP by sector of origin and by end use constructed by OER analysts for particular base years. Previous base years were 1960 and 1968, with the accounts for 1968 being considerably less detailed than those for 1960. Because a major price reform took place in 1967, followed by additional changes in 1969 (the first overall price reforms since 1955), we have needed a detailed set of national accounts for some year after 1969. The year 1970, the final year of the Eighth Five-Year Plan, was the most recent year for which data were relatively plentiful.

6. The Soviet government does not publish a set of national accounts comparable with those of Western countries. Rather, it publishes national income data that are geared to its own definitions of economic phenomena and its own political requirements. Accordingly, official Soviet national income data have a number of major deficiencies: (1) they exclude most services—for example, a substantial portion of transportation, communication, and government services; (2) defense expenditures are buried in accumulation and consumption; and (3) detailed methodology and subcomponents are not published. In view of these problems, OER has followed the practice of US academic specialists in the field and has constructed GNP accounts that are independent of the Soviet national aggregates, using detailed but fragmentary data on economic activities published by the Soviet government, various Soviet economists, and other reputable Soviet writers.

7. This report presents the GNP of the USSR in 1970 in four ways—by sector of origin and by end use, each valued in established prices and at factor cost. The established prices are (1) prices fixed by the Soviet government, (2) officially approved market prices, or (3) costs of government services as reflected in official statistical data. Factor cost prices are established prices adjusted to better reflect the full resource cost of capital and labor; for example, government subsidies must be added to the price of a commodity to reflect its full resource cost.

8. The ensuing sections present the statistical results and describe the accounting system and valuation for the 1970 accounts. Detailed documentation of the derivation of the numbers is given in the appendixes.

II. The Statistical Results

9. The Soviet GNP in established prices is based on two sets of income and outlay tables, namely, the incomes and outlays of households (Tables 1 and 2) and of the public sector (Tables 3 and 4). Table 5 shows gross national product as derived from the information in Tables 1–4. Table 6 shows GNP by end use, and Table 7, GNP by sector of origin. Tables 8 and 9 present GNP at factor cost by sector of origin and by end use.

Table 1

USSR: Household Incomes [1]
1970

	Billion Rubles
1. State wages and salaries	132.059
a. Worker and employee wage and salary bill	132.032
b. Profits distributed to consumer cooperative members	0.027
2. Net income of households from agriculture	41.577
a. Money wage payments by collective farms	14.453
(1) Payments to collective farm members	14.040
(2) Payments to hired workers	0.413
b. Net income from sales of farm products	8.264
c. Net farm income-in-kind	18.860
(1) Consumption-in-kind	18.347
(2) Investment-in-kind	0.513
3. Income of the armed forces	5.320
a. Military pay	3.320
b. Military subsistence	2.000
4. Other money income currently earned and statistical discrepancy	13.708
a. Private money income currently earned	2.669
b. Unidentified money income and statistical discrepancy	11.039
5. Imputed net rent	1.080
6. Imputed value of owner-supplied building services	0.880
7. Total income currently earned	**194.624**
8. Transfer receipts	**24.256**
a. Pensions and allowances	21.955
b. Stipends	1.300
c. Interest income	1.035
d. Net new bank loans to households	−0.034
9. Total income	**218.880**

[1] Sources: Appendix A.

Table 2

USSR: Household Outlays[1]
1970

	Billion Rubles
1. Retail sales of goods for consumption	147.015
a. State, cooperative, and commission sales	143.180
b. Collective farm ex-village market sales	3.835
2. Consumer services	25.932
a. Trade union and other dues	2.092
b. Housing	3.429
(1) Cash rents	1.091
(2) Imputed net rent	1.080
(3) Repair	1.258
c. Other services	20.411
(1) Utilities	3.478
(2) Transportation	7.200
(3) Communications	1.200
(4) Repair and personal care	4.674
(5) Recreation and culture	2.647
(6) Education	1.064
(7) Health	0.148
3. Consumption-in-kind	20.347
a. Farm consumption-in-kind	18.347
b. Military subsistence	2.000
4. Total outlays for consumption	**193.294**
5. Investment	**2.542**
a. Private housing construction	2.029
b. Farm investment-in-kind	0.513
6. Total outlays for consumption and investment	195.836
7. Transfer outlays	**23.044**
a. Net savings	9.720
b. Direct taxes	12.737
c. Other payments to the state	0.587
8. Total outlays	**218.880**

[1] Sources: Appendix B.

Table 3

USSR: Public Sector Incomes[1]
1970

Billion Rubles

1. Net income retained by organizations	34.782
a. Retained income of collective farms	7.186
b. Retained profits of state enterprises	26.481
c. Retained profits of consumer cooperatives	0.794
d. Retained profits of other organizations	0.321
2. Charges to economic enterprises for special funds	12.414
a. Social insurance and social security	9.436
b. Education; research	2.978
3. Taxes and other payments to the budget	126.517
a. Tax on income of collective farms	0.666
b. Tax on income of consumer cooperatives and other organizations	0.569
c. Deductions from profits of state enterprises	53.110
d. Turnover tax	49.380
e. Miscellaneous charges	22.792
4. Allowance for subsidized losses, n.e.c	−19.454
5. Consolidated total charges against current product, net of depreciation	**154.259**
6. Depreciation	**31.827**
7. Consolidated total charges against current product	186.086
8. Transfer receipts	**23.044**
a. Net savings of households	9.720
b. Direct taxes	12.737
c. Other payments to the state	0.587
9. Consolidated net income	**209.130**

[1] Sources: Appendix C.

Table 4

USSR: Public Sector Outlays [1]
1970

	Billion Rubles
1. Communal services	26.351
a. Education	15.034
b. Art	0.756
c. Health	10.016
d. Physical culture	0.545
2. General administrative and miscellaneous services	9.971
a. General agricultural programs	1.130
b. Forest economy	0.822
c. State administration (*apparat*)	3.952
d. Municipal and related services	4.067
(1) Culture	1.379
(2) Municipal services	0.712
(3) Civilian police	1.562
(4) Administrative organs of social organizations	0.414
3. Gross investment	117.587
a. Fixed capital	102.433
b. Inventories	15.154
4. Research and development (civilian and military)	9.927
5. Outlays n.e.c. (defense, net exports, and unidentified outlays) and statistical discrepancy	21.038
6. Consolidated total value of goods and services, exclusive of sales to households	**184.874**
7. Transfer outlays	**24.256**
a. Pensions and allowances	21.955
b. Stipends	1.300
c. Interest payments to households	1.035
d. Net new bank loans to households	−0.034
8. Consolidated total outlays	**209.130**

[1] Sources: Appendix D.

Table 5

USSR: Gross National Product Account[1]
1970

	Billion Rubles
Incomes	
1. Total income of households currently earned	194.624
2. Consolidated charges of government, social, and economic organizations against current product, net of depreciation	154.259
3. Net national product	348.883
4. Depreciation	31.827
5. Gross national product	380.710
Outlays	
1. Total outlays of households for consumption and investment	195.836
2. Consolidated total value of goods and services disposed of by government, social, and economic organizations, exclusive of sales to households	184.874
3. Gross national product	380.710

[1] Incomes from Tables 1 and 3; outlays from Tables 2 and 4.

Table 6

USSR: Gross National Product in Established Prices by End Use [1]
1970

	Billion Rubles
1. Consumption	**219.645**
a. Goods	167.362
(1) Food	107.667
(2) Soft goods	45.720
(3) Durables	13.975
b. Services	52.283
(1) Trade union and other dues	2.092
(2) Housing	3.429
(3) Utilities	3.478
(4) Personal transportation	7.200
(5) Personal communications	1.200
(6) Repair and personal care	4.674
(7) Recreation, art, and physical culture	3.948
(8) Education	16.098
(9) Health	10.164
2. Investment	**120.129**
a. New fixed investment	86.364
(1) Machinery and equipment	25.300
(2) Construction and other capital outlays	57.009
(3) Net addition to livestock inventories	4.055
b. Capital repair	18.611
c. Inventories	15.154
3. Other public sector expenditures	**40.936**
a. General administrative and miscellaneous services	9.971
b. Research and development (civilian and military)	9.927
c. Outlays n.e.c. (defense, net exports, and unidentified outlays) and statistical discrepancy	21.038
4. Gross national product	**380.710**

[1] Sources: Appendix E.

Table 7

USSR: Gross National Product in Established Prices, by Sector of Origin[1]
1970

Billion Rubles

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Wage Bill	Other and Imputed Income	Social Insurance	Profits	Depreciation	Turnover and Other Indirect Taxes	Less: Subsidies	Total
Total	**135.352**	**62.223**	**9.436**	**89.154**	**31.827**	**72.172**	**19.454**	**380.710**
Industry	48.849	2.200	3.531	51.973	15.006	49.890	14.330	157.119
Construction	16.285	1.564	0.993	4.378	2.159	0	0	25.379
Agriculture	10.406	41.619	1.612	12.548	5.561	0.080	1.342	70.484
Transportation	13.095	0.152	0.694	9.949	4.866	0	0	28.756
Communications	1.545	0.017	0.082	0.796	0.385	0	0	2.825
Trade[2]	8.600	0.120	0.387	6.456	1.439	0.063	0.400	16.665
Services	32.779	3.510	2.103	3.054	1.752	0.670	3.262	40.606
Military personnel	3.320	2.000	0	0	0	0	0	5.320
Other branches[3]	0.473	0.002	0.034	0	0.050	0	0.120	0.439
Unallocated	0	11.039	0	0	0.609	21.469	0	33.117

[1] Sources: Appendix F.

[2] Trade, public dining, material-technical supply, and procurement.

[3] Other branches of material production, including publishing (newspapers, magazines, books), scrap collection, film and sound recording studios, and several other activities.

Table 8

USSR: Gross National Product at Factor Cost, by Sector of Origin[1]
1970

Billion Rubles

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Wage Bill	Other and Imputed Income	Social Insurance	Charge on Fixed Capital	Charge on Working Capital	Depreciation	Total
Total	**137.976**	**60.708**	**9.592**	**70.749**	**20.413**	**40.781**	**340.219**
Industry	48.849	2.200	3.531	20.169	7.724	15.006	97.479
Construction	16.285	1.564	0.993	7.774	1.289	2.159	30.064
Agriculture	10.406	41.619	1.612	7.770	2.437	5.561	69.405
Transportation	13.095	0.152	0.694	7.157	0.491	4.866	26.455
Communications	1.545	0.017	0.082	0.504	0.035	0.385	2.568
Trade[2]	8.600	0.120	0.387	2.309	7.818	1.439	20.673
Services	32.779	3.510	2.103	24.978	0.617	10.706	74.693
Military personnel	5.944	0.485	0.156	0	0	0	6.585
Other branches[3]	0.473	0.002	0.034	0.088	0.002	0.050	0.649
Unallocated	0	11.039	0	0	0	0.609	11.648

[1] Sources: Appendix G

[2] Trade, public dining, material-technical supply, and procurement.

[3] Other branches of material production, including publishing (newspapers, magazines, books), scrap collection, film and sound recording studios, and several other activities.

Table 9

USSR: Gross National Product at Factor Cost, by End Use[1]
1970

Billion Rubles

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Factor Cost Adjustment Transferred from									
		Industry									
	GNP in Established Prices	Explicit Turnover and Other Indirect Taxes	Implicit Turnover Tax, Profits, Subsidies, and Capital Charges	Construction	Agriculture	Trade and Other Branches of Material Production	Transportation and Communications	Services	Unallocated Income	Total Factor Cost Adjustment	GNP at Factor Cost
Total	**380.710**	**38.208**	**19.091**	**−4.110**	**1.945**	**−4.016**	**3.256**	**−35.352**	**21.469**	**40.491**	**340.219**
Consumption	**219.645**	**37.825**	**7.280**	**0**	**1.701**	**−3.313**	**1.832**	**−31.843**	**11.601**	**25.083**	**194.562**
Goods	167.362	36.589	6.441	0	1.630	−3.249	0.612	0	9.771	51.794	115.568
Food	107.667	22.102	−2.872	0	1.392	−1.370	0.303	0	6.130	25.685	81.982
Soft goods	45.720	10.623	7.743	0	0.223	−0.994	0.198	0	2.723	20.516	25.204
Durables	13.975	3.864	1.570	0	0.015	−0.885	0.111	0	0.918	5.593	8.382
Services	52.283	1.236	0.839	0	0.071	−0.064	1.220	−31.843	1.830	−26.711	78.994
Trade union and other dues	2.092	0	0	0	0	0	0	0	0	0	2.092
Housing	3.429	0	0	0	0	0	0	−24.358	0	−24.358	27.787
Utilities	3.478	0.386	0.076	0	[2]	−0.003	0.020	−1.340	0.074	−0.787	4.265
Personal transportation	7.200	0.131	0.109	0	0.001	−0.008	0.931	0	0.972	2.136	5.064
Personal communications	1.200	0.014	0.016	0	[2]	−0.002	0.220	0	0.202	0.450	0.750
Repair and personal care	4.674	0.106	0.293	0	0.005	−0.011	0.012	−0.341	0.114	0.178	4.496
Recreation, art, and physical culture	3.948	0	0	0	0	0	0	−0.761	0	−0.761	4.709
Education	16.098	0.330	0.187	0	0.036	−0.020	0.018	−3.243	0.243	−2.449	18.547
Health	10.164	0.269	0.158	0	0.029	−0.020	0.019	−1.800	0.225	−1.120	11.284
Investment	**120.129**	**0.219**	**8.845**	**−4.073**	**0.228**	**−0.662**	**1.255**	**0**	**8.213**	**14.025**	**106.104**
New fixed investment	86.364	0.079	6.526	−3.409	0.032	−0.297	0.865	0	5.609	9.405	76.959
Machinery and equipment	25.300	0	2.561	0	0.005	−0.056	0.108	0	1.269	3.887	21.413
Construction and other capital outlays	57.009	0.079	3.965	−3.409	0.027	−0.241	0.757	0	4.340	5.518	51.491
Net addition to livestock inventories	4.055	0	0	0	0	0	0	0	0	0	4.055
Capital repair	18.611	0	2.504	−0.664	0.009	−0.085	0.220	0	1.703	3.687	14.924
Inventories	15.154	0.140	−0.185	0	0.187	−0.280	0.170	0	0.901	0.933	14.221
Other public sector expenditures	**40.936**	**0.164**	**2.966**	**−0.037**	**0.016**	**−0.041**	**0.169**	**−3.509**	**1.655**	**1.383**	**39.553**
General administrative and miscellaneous services	9.971	0.137	0.190	0	0.006	0.033	0.029	0.784	0.105	1.284	8.687
Research and development (civilian and military)	9.927	0.027	0.726	0	0.005	−0.025	0.038	−3.028	0.369	−1.888	11.815
Outlays n.e.c. (defense, net exports, and unidentified outlays) and statistical discrepancy	21.038	0	2.050	−0.037	0.005	−0.049	0.102	−1.265	1.181	1.987	19.051

[1] Sources: Appendix H.
[2] Value less than 0.0005 billion rubles.

III. Incomes and Outlays in Established Prices for 1970

A. The Accounting System

10. The OER accounting system for Soviet GNP is similar to the system developed by Abram Bergson and followed by RAND Corporation researchers in a series of studies for 1949–66.[1] Abraham Becker authored the most elaborate of these studies, for 1958–64, and our procedures follow his closely.

11. In brief, the accounting system encompasses all economic activity within two sectors, the household sector and the public sector. The public sector is defined to include government, the producing enterprises, and public organizations, such as the Communist Party, trade unions, and voluntary associations. Since incomes and outlays must be equal conceptually, the discrepancies in the two sectoral accounts provide a crude measure of the incompleteness or uncertainty of the data.

12. The income and outlay accounts are abbreviated compared with standard Western national accounts. The consolidation of government and producing enterprises and organizations into a single sector sacrifices completeness and detail but is consistent with Soviet organization and reporting. All major economic activities wherever performed are planned or regulated by the government; many economic reports combine the transactions of the government and producing enterprises. The government, moreover, does not report many activities for which it has accounts. Because of the accounting consolidation, transactions between one part of the public sector and another are not shown. These transactions would be very illuminating if available: for example, those between economic enterprises and government or between banks and government.

13. The income and outlay tables are not separated according to kind of transaction—that is, the production, appropriation, and capital accounts are not estimated. This elaboration of the accounts would have been pursued if it would have facilitated the use of additional available information. This does not seem to be the case. So far as is known, all relevant published information, with one exception, has been mobilized in these accounts. The exception is a series of Soviet input-output tables published in part for 1959, 1966, and 1972.[2] Use of the input-output (I-O) data would not require an elaboration of the accounting system by type of transaction. Primarily, the I-O tables would permit a more detailed account of GNP by sector of origin. Whether they would lead to a more accurate calculation of GNP and its major parts remains to be seen. The I-O data are classified differently from the previously published national economic data, and the difficult job of identifying the differences and reconciling the two is still in midlabyrinth.

B. Boundaries

14. The coverage of economic activity in these accounts generally follows the practice of the Bureau of Economic Analysis of the US Department of Commerce. Government purchases of goods and services other than by government productive enterprises are included in final product. In both the United States and the USSR these consist of some or all outlays on health, education, art, physical culture, defense, research and development, investment, and government administration. In the OER Soviet accounts government activities are valued at cost, as are government services in the US accounts.

15. The overall coverage of economic activities depends on the boundary between final and intermediate product. Differences between our Soviet accounts and the US accounts arise particularly in activities that are treated as enterprise costs in the United States but, because of different accounting standards, as final product in the USSR—for example, some research and development. In addition, the division of activities between government and nongovernment is so different in the two countries that serious problems of comparability arise. (A more detailed discussion of the comparability of the Soviet and US accounts is given in a later section.)

16. The USSR is predominantly socialist. Nonetheless, various private economic activities are officially sanctioned, such as agriculture on private

[1] Abram Bergson and Hans Heymann, Jr., *Soviet National Income and Product, 1940–48*, Columbia University Press, New York, 1954; Oleg Hoeffding and Nancy Nimitz, *Soviet National Income and Product, 1949–1955*, RAND Corporation, RM-2101, April 1959; Abram Bergson, *The Real National Income of Soviet Russia since 1928*, Harvard University Press, Cambridge, 1961; Abraham S. Becker, *Soviet National Income, 1958–1964, National Accounts of the USSR in the Seven Year Plan Period*, University of California Press, Berkeley and Los Angeles, 1969; and Sally Anderson, *Soviet National Income, 1964–1966, in Established Prices*, RAND Corporation, RM-5705-PR, September 1968.

[2] The 1972 table has just been published (January 1975) in an incomplete form and has not yet been reconstructed by US economists as have been the 1959 and 1966 tables.

plots, marketing of the produce of private plots, private home building (for use but not for sale), and repair and personal services. In addition, a great deal of illegal production goes on. Bootleg production of alcoholic beverages is widespread, and many examples of using state equipment and materials for private production are cited in the Soviet press. Much of this activity produces useful services and fills interstices in the economy that the official system cannot fill. Although we explicitly count only legal production of goods and services (as do the US national income analysts), some illegal incomes may be counted implicitly in the statistical discrepancy for household incomes.

17. Finally, we attempt to follow US practice regarding imputations and include in GNP: (1) consumption-in-kind of home-produced food, (2) subsistence of personnel in the military forces, (3) farm investment-in-kind, (4) owner-supplied labor in private home construction, and (5) rental value of owner-occupied housing.

C. The Income and Outlay Accounts

18. Household incomes in Table 1 include all wages and salaries, income from sales of farm product, imputed incomes, and transfer receipts. Although most incomes are reported by the government, imputed and private incomes must be estimated, along with military pay.

19. The largest part of household outlays in Table 2 is represented by retail sales, which are officially reported. State-provided services are not, in general, reported and must be estimated piecemeal. Private services are also estimated, as are imputed values, such as rent of private homes, consumption-in-kind, and investment-in-kind.

20. Household outlays (including transfers) are accepted as the control total for household incomes. This generates a residual or statistical discrepancy of unidentified money incomes. The significance of this discrepancy is discussed below.

21. Public sector incomes is a more complex account, consisting of the unduplicated incomes of producing enterprises, public organizations, and the various levels of government. These incomes are mainly (1) the net income retained by enterprises and organizations after taxes and (2) the taxes and revenues of government. To these are added expenditures of enterprises that are charged as costs but that really represent an allocation of incomes for taxes or final product—expenditures on social insurance and social security, education, and research. Finally, subsidies to producers paid out of government revenues are deducted, and depreciation and transfer receipts are added.

22. The total of taxes and other identified payments to the budget in Table 3 does not equal the total receipts of government. The reported state budget includes a large unidentified category of revenues about which little is known. We have no way of determining how much of this residual income originates in the transfer of assets—such as confiscation of property and sales of reserves (gross or net)—or whether receipts from foreign trade are handled on a gross or net basis. The procedure used here follows Becker in assuming that three-quarters of the unidentified revenues should be charged against the current product of the public sector. The remainder is considered as receipts that are netted out of public sector outlays (for example, net additions to state reserves or unspent funds from the 1969 budget balanced against 1970 funds transferred to the 1971 budget), or as fictitious in some sense. In addition, we wish to exclude any accounting profits accruing from foreign trade operations so that GNP will be an approximate measure of the level of productive activity. (See Appendix C, item 3, e.) Accepting three-quarters as the dividing line is a crucial assumption, since total public sector charges against current product (Table 3) are part of the control total for GNP—GNP as the sum of household incomes and public sector incomes (Table 5).

23. Public sector outlays include all purchases of final goods and services by government, enterprises, and organizations. These are communal services provided primarily by government to households, administration and other government services, investment, research and development, outlays n.e.c., and transfer outlays. Investment outlays originally included in services, administration, and research and development have been netted out. They are included in the consolidated investment entry. All explicit public sector expenditures other than investment are current expenditures.

24. Outlays n.e.c. are the residual between explicit public sector outlays and the total of public sector incomes. Conceptually, the residual includes those defense expenditures not included in other expenditure accounts, net exports at domestic prices, net expenditures on strategic reserves, other

unidentified outlays, and a statistical discrepancy. The major components are activities about which the Soviet government publishes incomplete information or none at all.

IV. GNP in Established Prices

A. By End Use

25. GNP is derived from the income and outlay accounts as shown in Table 5. Total incomes of households and the public sector (net of transfers) are equal to total outlays of households and the public sector (net of transfers)—and to GNP. The breakdown of GNP by end use in Table 6 is taken from the outlay tables; outlays of households for services and for investment are merged with corresponding outlays by the public sector. Consumption of goods is the sum of retail sales and consumption-in-kind, including military subsistence. Expenditures for defense are included in research and development as well as in outlays n.e.c. Outlays for military purposes may also be included in other end-use aggregates—for example, investment, education, and health.

B. By Sector of Origin

26. The breakdown of GNP into value added by sector of origin in established prices is shown in Table 7. The components are wages, other and imputed income, social insurance, profits, depreciation, and indirect taxes, less subsidies. The component totals are taken from the household and public sector income accounts, Tables 1 and 3.

27. The breakdown of the components of value added by sector requires a painstaking examination and rearrangement of Soviet data. In general, data for distributing state wages, social insurance, profits, depreciation, and indirect taxes among industry, construction, agriculture, transportation, communications, other branches, and trade—with services as a residual—are available from Soviet sources.[3] Other and imputed income, incomes of military personnel, and subsidies were estimated, sometimes from very indirect evidence. The assignment of subsidies on agricultural products entirely to industry involves some overstatement, since a (relatively small) portion of these products passes directly into the trade net without industrial processing.

[3] A further breakdown of value added into industrial branches and individual services is given in Appendix F, Tables F-1 and F-4.

28. Both the statistical discrepancy in household incomes and miscellaneous charges from budget revenues have been left in an unallocated row. Their treatment in deriving GNP weights is discussed in the section on factor cost adjustment below.

C. Reliability and Accuracy

29. Efforts to estimate Soviet GNP are flawed by the same uncertainties that caused the studies to be undertaken in the first place. The difficulties include (1) secrecy regarding defense and related fields, penal populations and activities, strategic reserves including gold, and balance of payments; (2) inadequate reporting of services of all kinds, private activities, and many details of farm activities; (3) confusion between intermediate and final outputs; (4) frequent reporting in constant prices without corresponding current price values; and (5) a pervasive tendency to withhold detailed definitions and explanations of methodological procedures.

30. We assume from the outset that the flows reported by the Soviet government are essentially complete within the framework of Soviet accounting. That is, although some expenditures may be hidden in a budget residual or otherwise disguised or mislabeled, they are not omitted entirely. The outright omission of expenditures would require that some source of funds—perhaps enterprise profits—be correspondingly understated. This would amount to the "double set of accounts" that Westerners have speculated about for some years. Although such omissions cannot be ruled out, there is no evidence that they exist. In contrast, we assume that there is room for concealment of substantial amounts in the many unidentified (and identified) funds already included in our accounts.

31. In spite of these difficulties and uncertainties the GNP total in this publication seems plausible and accurate enough for most analytical purposes. The discussion below suggests that the GNP figure reflects errors in the order of billions of rubles, rather than tens of billions. In comparison with a total GNP of 381 billion rubles, this degree of error is not serious. It is certainly a much smaller problem than the difficulties in identifying and measuring growth in real Soviet economic activity and in making comparisons with other countries possessing different socioeconomic systems. The unknowns and uncertainties have a particularly serious effect on the analysis of the defense component of end use.

32. The accuracy of the estimated GNP depends on the control totals for incomes and outlays. These are taken from household outlays and public sector incomes. Household outlays appear to be nearly complete, with the consumption-in-kind estimates resting on reasonably good data. The estimates of nonagricultural private activity are weaker. These include estimates of private home construction, repair, and services (based on information reported or estimated by Soviet writers) and estimates of private health and education services (judged to be 1% of the wage bill for the corresponding state services). The estimates may be too small. Many other kinds of private activities are referred to in the Soviet press; for the most part they are illegal, such as pilfering or the use of private cars for hire, and probably not very large. If private incomes are understated, outlays also are. As an offset, retail trade includes commission sales of secondhand goods, and transportation and recreation include a part of business travel expense. (This overstatement is perhaps not much worse than it is in US accounts.)

33. The statistical discrepancy between explicit household incomes and total household outlays is 11 billion rubles, or 5% of total outlays. Becker's accounts for 1958–64 showed discrepancies ranging from 5½% to 10%.[4] The 1970 discrepancy implicitly covers a long list of incomes that could not be estimated, such as prisoners' wages.[5] These incomes are individually minor but collectively may account for a substantial part of the discrepancy. This suggests that if outlays are overstated, the magnitude of the overstatement is not disturbingly large. The same judgment applies to the personal consumption portion of GNP by end use, which comes from the household outlays table.

34. The public sector total for incomes and outlays is more uncertain. Most of the incomes are reported, and the accounting procedures are reasonably clear. Thus, the figures for retained incomes, major tax revenues, depreciation, and social insurance and social security appear to be acceptable. But enterprise charges for education and research and miscellaneous charges in budget revenues involve large margins of error. The former is not reported, and the estimate could conceivably err by 1 billion rubles. More important, miscellaneous charges were estimated to include three-quarters of unidentified budget revenues from the socialized sector. One-half or nine-tenths would perhaps be defensible—an implied range of −7 to +4½ billion rubles compared with the estimate. The allowance for subsidized losses includes an estimate for housing subsidies based on very indirect evidence. The major subsidy for meat and milk products, although not announced, is implicit in Soviet data. Subsidies for agricultural inputs, the press, and arts were pieced together from fragmentary data. Although there may be other subsidies that we have failed to detect, it is unlikely that these could be large. On balance, however, the public incomes total of 209 billion rubles does not seem to be grossly wrong.

35. On the public outlays side, communal services and research and development seem to be properly accounted for in Soviet accounting terms. Conversely, the items under general administrative and miscellaneous services are not announced budget categories. They are estimated from employment and wage statistics plus an allowance for materials expenditures. They are assumed to be funded under the budget categories "financing the national economy" and "social-cultural measures," as well as in the provision for administration (1.7 billion rubles). The small item for administrative organs of public organizations (such as trade unions and the Communist Party) is paid for by membership dues paid by households. Total public outlays should also include defense expenditures, expenses of militarized security organizations, net foreign investment, and changes in strategic reserves. None of these are reported. Finally, investment may include some funding of defense durable goods and defense construction.

36. Given these uncertainties in outlays, the public sector incomes total is accepted as the total for outlays. In an attempt to test the reasonableness of using public sector incomes as a control total, the outlays n.e.c. component of the public sector outlays in Table 4 can be compared with estimates of the entry's possible components. Total outlays n.e.c. are 21 billion rubles. Net exports of goods in domestic prices can be roughly estimated at a minus 6 billion rubles from estimated conversion ratios for exports and imports.[6] This leaves 27 billion rubles to cover (1) the part of announced budget expenditures for defense of 17.9 billion rubles (as well as undisclosed defense spending) that is not covered in other expenditure accounts,

[4] Becker, *op. cit.*, p. 19.

[5] See Appendix A, item 4, b.

[6] Barry L. Kostinsky and Vladimir G. Treml, Draft Version of *Foreign Trade Prices in the Soviet Union: Exports and Imports in the 1966 Input-Output Table*, forthcoming publication of US Department of Commerce, Bureau of Economic Analysis, Foreign Economic Reports, no. 8.

(2) outlays on the militarized KGB on the order of 1 billion rubles, and (3) changes in strategic reserves.

37. Because 1970 was a good harvest year (and 1969 was a poor year), net additions to grain reserves were presumably positive. However, 1 billion rubles would cover 10 million tons of grain. All gold production might have been added to reserves. This would probably amount to no more than 0.3 billion rubles. On the basis of these rough calculations, some 26 billion rubles of the outlays n.e.c. category would be left over for unstated defense or other unidentified expenditures. Taking into account possible errors in miscellaneous revenues and in the education and research outlays charged to enterprise costs—the total might be 8 billion rubles too high or 5½ billion rubles too low.

38. Although somewhat inconclusive as a test of the public sector incomes total, the examination of the outlays n.e.c. residual does not suggest that the estimate of public sector incomes is too high or too low. The uncertainty in household outlays—the control total for household incomes—probably is considerably less than the uncertainty in the estimate of public sector incomes. Thus total GNP, which is the sum of public sector and household incomes (both net of transfers), does not seem to be seriously in error.

39. The individual components of end use other than consumption are less satisfactory. As noted above, some defense expenditures may be included in fixed investment. Furthermore, the breakdown of research and development between civilian and military cannot be deduced from financial flow data.

40. The sector-of-origin components are based on direct reporting for a very large part of their total values. Agricultural income-in-kind is based on reasonable estimates of prices and quantities. Other and imputed nonagricultural and private incomes and nonagricultural subsidies are less soundly based, but errors in estimates would be small in absolute terms and cannot seriously distort the distribution of value added by sector. The chief problems in the sector-of-origin breakdown lie in the unallocated row consisting of unidentified household incomes, miscellaneous budget charges, and a small part of depreciation.

D. Comparison with Official Soviet National Income

41. The OER estimate of Soviet GNP cannot be compared directly with official Soviet national income because the coverage is quite different. A reconciliation, however, can be attempted by adjusting GNP to the Soviet coverage and definition, insofar as this is known. The principal difference between GNP and Soviet national income is the exclusion from Soviet national income of (1) most personal services as well as services provided by government ("nonproductive branches" of the economy in Marxist terminology [7]) and (2) depreciation on fixed capital in branches of material production (the "productive" branches). Both categories must be deducted from the OER estimate of GNP in 1970 to approximate Soviet "national income produced" as defined in official USSR statistics. In addition, allowance must be made for differences in the price basis of farm household income-in-kind and for the inclusion in Soviet national income of an "account of price differences" arising in foreign trade. The reconciliation of OER's estimate of Soviet GNP and official Soviet national income produced in 1970 is shown below:

	Billion Rubles
GNP (in established prices) [1]	380.7
Less:	
The value added in nonproductive services [2]	55.9
Personal transport and communications [3]	9.5
Military personnel costs [1]	5.3
Other nonproductive services [4]	36.2
Services included in unallocated GNP [5]	4.9
Depreciation on productive fixed capital [6]	28.3
Residual book value of retired productive fixed capital [7]	1.6
Plus:	
Farm household income-in-kind valuation adjustment [8]	0.1
"Account of price differences in foreign trade" [9]	7.0
Equals: OER implicit "national income produced," Soviet concept	**302.0**
Official Soviet national income produced [10]	**289.9**
Difference	12.1

[1] See Table 7.

[2] Derived as the sum of the parts.

[3] Personal transport and communications are estimated at 30% of the total GNP originating in transportation and communications (31.6 billion rubles—Table 7). The nonproductive share is the ratio of nonproductive fixed capital to total fixed capital in the two sectors (TsSU, *Narodnoye khozyaystvo SSSR v 1968 godu*, Moscow, 1969, p. 60–61, hereafter referred to as *Narkhoz 1968*, and similarly for other years in the series of official Soviet statistical handbooks).

[4] Other nonproductive services are derived as the difference between total GNP originating in services (40.6 billion rubles—Table 7 and Appendix F, Table F-4) and services included in Soviet national income: (1) all productive personal services, that is, those included in industry (1.8 billion rubles—Appendix F, Table F-2); utilities (2.0 billion rubles); and forest economy (0.5 billion rubles). (See Appendix F, Table F-4.)

[7] In Soviet accounting practice the main nonproductive branches are government administration, science (research and development), credit and insurance, military personnel costs, health, education, housing, personal transportation and communications, recreation, and personal care.

[5] Services included in unallocated GNP are estimated at 14.7% of the total GNP not allocated to individual sectors (33.1 billion rubles—Table 7). The share is the ratio of the total value added in personal transport and communications, military personnel costs, and other nonproductive services to total allocated GNP.

[6] Depreciation on productive fixed capital is derived as the difference between total depreciation (31.8 billion rubles—Table 7) and the sum of unallocated depreciation (0.6 billion rubles—Table 7) and the depreciation on nonproductive fixed capital estimated to be included in the total (2.9 billion rubles). The latter includes depreciation allocated to housing; repair and personal care; recreation, art, and physical culture; and 30% of depreciation in transportation and communications. (See Appendix F, Table F-4, and Table 7.)

[7] The residual book value of retired productive fixed capital is estimated on the basis of (1) the residual book value of retired fixed capital in industry in 1970 (0.837 billion rubles—V. K. Senchagov, *Finansy i effektivnost' proizvodstvennykh fondov*, Moscow, 1970, p. 106) and (2) the share that industrial fixed capital represented of the total productive fixed capital (53%). Total productive fixed capital is derived as the sum of annual average fixed capital in industry, construction, agriculture, trade, and 70% of the fixed capital in transportation and communications (Appendix G, item 4, tabulation, and note 3, above).

[8] OER estimate.

[9] Soviet national income produced includes a valuation in domestic prices of the gain or loss of resources resulting from a precise balance of trade in foreign exchange prices (at the actual level of exports or imports, whichever is lower). This valuation is estimated at 7.0 billion rubles on the basis of the trade balance in foreign trade prices (*Narkhoz 1970*, p. 615) and the estimate of the trade balance in domestic prices (p. 16, above).

[10] *Narkhoz 1972*, p. 533.

42. Soviet official national income produced and the OER implicit "national income produced" are arrived at by quite different accounting procedures, and, as a result, discrepancies and unallocated categories are different and differently handled. The Soviet calculation starts with the value of final product of the productive branches, including total transportation and communications. Deduction of the value of personal transportation and communications gives final product of the productive branches. This total includes the value of household consumption of material products, materials purchases by the nonproductive branches, and gross investment in both productive and nonproductive branches. Then, depreciation of fixed capital in the productive branches is subtracted to obtain official national income produced. Thus, Soviet national income implicitly includes nonproductive depreciation, since only productive depreciation is deducted from gross investment.

43. The OER calculation starts with estimated gross national product, from which value added in the nonproductive branches is subtracted to obtain the value of final product of the productive branches. As in the case of the Soviet calculation, this remainder includes the purchases of materials by nonproductive branches, the consumption of material products, and gross investment, both productive and nonproductive. From this remainder, depreciation on productive fixed capital is subtracted to get the equivalent of the Soviet national income.

44. There is considerable uncertainty in this attempted reconciliation: (1) the content and coverage of nonproductive services in the Soviet accounting is far from clear; in particular, the breakdown of the unallocated value added of 33 billion rubles from Table 7 into productive and nonproductive activity is quite arbitrary; (2) Soviet accounting probably includes in final product—that is, the sum of net outputs—activities that OER does not consider to be value added; and (3) the Soviet calculations of farm income-in-kind and price differences arising in foreign trade cannot be duplicated closely. Nonetheless, the resulting discrepancy of 12.1 billion rubles, or 4.2% of official national income, suggests a gross consistency between the components used in constructing GNP and those in Soviet national income.

45. Similarly, personal consumption as reported by the Central Statistical Administration can be compared with household outlays for consumption in the OER estimate of Soviet GNP. The reconciliation of OER's estimate of household outlays for consumption and official Soviet personal consumption in 1970 is shown below:

	Billion Rubles
Household outlays for consumption (in established prices) [1]	193.3
Less:	
Services omitted in official Soviet consumption	
Trade union and other dues [2]	2.1
Housing—rent and repair [3]	3.2
Other services [4]	14.1
Plus:	
Farm household income-in-kind valuation adjustment [5]	0.1
Depreciation on housing [6]	7.0
Equals: Estimated Soviet "personal consumption"	**181.0**
Official Soviet personal consumption [7]	**177.9**
Difference	3.1

[1] See Table 2, item 4.

[2] See Table 2, item 2, a.

[3] Outlays for housing are derived as the difference between the total outlays of households for rent and repair of housing (3.4 billion rubles—Table 2, item 2, b) and households' purchases of state-provided repair (0.2 billion rubles—Appendix B, item 2, b, (3)).

[4] Other services are derived as the difference between the total outlays of households for other services (20.4 billion rubles—Table 2, item 2, c) and the sum of outlays for (1) utilities (3.5 billion rubles—Table 2, item 2, c, (1)) and (2) services included in Soviet retail trade (2.8 billion rubles). The latter is the sum of (1) film rentals (0.2 billion rubles—Appendix B, item 1, a) and (2) all other services included in retail trade, with the exception of state-provided housing repair (2.8 billion rubles less 0.2 billion rubles—Appendix B, item 1, a, and Appendix B, item 2, b, (3)).

[5] OER estimate.

[6] See Appendix G, Table G-3, item 6.

[7] *Narkhoz 1972*, p. 533.

Once again there seems to be a general consistency, bearing in mind some substantial uncertainties about Soviet procedures and some information gaps. For example, commission sales in retail stores are excluded from Soviet consumption but included in OER's GNP because we do not know how large they are.

46. A reconciliation of the major sectors of origin in the Soviet breakdown and the OER breakdown in Table 7 does not seem to be feasible. There are important and unquantifiable differences in coverage and definition. The major problem is the extent to which Soviet sectors are on a "pure" or commodity classification basis; in contrast, the OER sectors are on an establishment basis.

E. Comparability with Becker's 1958–64 Accounts

47. The OER accounts closely follow Becker's format, classifications, and procedures. Hence, they are generally comparable except in the few cases where later evidence has called for some deviations.

48. The choice of control totals for both household and public sectors is the same. Becker, however, accepts an adjusted Soviet-reported total for household consumption that is larger by 3%, or 2.7 billion rubles in 1960, than the sum of his estimated consumption outlays. In the 1970 accounts, estimated household consumption outlays are slightly larger than the corresponding adjusted Soviet consumption and are used here as the consumption total.

49. In the public sector the only significant difference between the OER and the Becker accounts is in the approach to administration. Becker simply uses the budget item, administration. In this publication outlays for "administration and miscellaneous services" are 10.0 billion rubles, compared with a budget item for "administration" of 1.7 billion rubles. The effect of this change in approach is to reduce radically the outlays n.e.c. The categories in Becker's accounts comparable to the 1970 n.e.c. are defense plus internal security minus civilian police plus his outlays n.e.c. Including civilian police, these sums range from 16.1 billion rubles, or 18.1% of total outlays in 1960, to 15.6 billion rubles, or 13.3% in 1964. In our 1970 accounts the outlays n.e.c. plus civilian police total 22.6 billion rubles, or 10.8% of public sector outlays.

F. Comparison with US GNP—Coverage and Classification[8]

50. US government expenditures, as reported, cover a wide variety of activities, some of which have to be separated and reclassified in order to compare US and Soviet line items. For example, producing enterprises of the US government—TVA facilities, for example—probably should be combined with private production. Health and education expenditures of the US government must be combined with similar private expenditures to get health and education totals comparable to those in the OER Soviet accounts. In addition, US GNP accounts do not initially separate current from capital expenditures of government as is done in the Soviet accounts. In particular, US government expenditures on highways, airports, utilities, housing, schools, health facilities, and research facilities should be separated from current outlays on government.

51. Another set of problems involves the Soviet classification of activities as intermediate and final. The categories in question include research and development, economic administration, and "capital repair." In these categories, some activity in the United States is financed by private business and is written off as a current expense; therefore, it is recorded as intermediate product rather than as final product. In each case a much larger part is included with final product in Soviet practice and cannot be separated. Consequently, direct international comparisons (such as those requiring conversion of Soviet GNP to dollars or US GNP to rubles) must reconcile the coverage of these categories.

[8] Comparison of Soviet GNP in established prices with US GNP in market prices raises questions of interpretation too numerous to be considered here. Some of these relate to the extent to which Soviet accounting actually reflects the cost of resources used. These problems are reviewed and attacked in the discussion of the factor cost adjustment in the next section.

V. The Factor Cost Adjustment

52. The objective of the factor cost adjustment is to provide a measure of the resources actually allocated to various economic activities. An adjustment is required because established prices gravely distort relative value shares by sector or product group. For example, the incidence of turnover taxes overstates the resource cost of the products of food and light industries relative to other sectors, and the absence of a depreciation charge for housing understates the amount of real resource use in that sector. In addition, Soviet prices do not accurately reflect interest on capital—a resource cost—but do include turnover and other indirect taxes, state subsidies, and profits, which do not represent resource costs or represent them imperfectly. [9]

53. The conversion of values in established prices to values at factor cost then consists mainly of (1) adding charges on fixed and working capital, subsidies, and depreciation in nonproductive services and (2) subtracting profits and indirect taxes. The adjustment to factor cost is first calculated for GNP by sector of origin (see Table 8 and Appendix G). An adjustment is also made to wages (including in-kind payments) and social insurance of military personnel to reflect the opportunity cost of military conscripts. The unallocated entry under indirect taxes of 21.469 billion rubles disappears by definition in the factor cost adjustment; unallocated "other and imputed income" remains and must be allocated by sector before the sector values can be used as weights for sector growth indexes.

54. Having estimated the factor cost adjustments for the sectors of origin, we then distribute these adjustments among the end-use categories (see Table 9 and Appendix H). The natural link between GNP by sector of origin and GNP by end use is an I-O table, which shows interindustry transactions in a matrix form. With such a matrix, (1) the GNP sector-of-origin data can be thought of as the value added or third quadrant of an I-O table, and (2) the GNP by end use can be thought of as the final demand or second quadrant of an I-O table. The interindustry matrix forms the first quadrant linking the two sets of data. Using an interindustry matrix that we have estimated on the basis of a Soviet I-O table for 1966, the changes in deliveries to final demand resulting from changes in value added (that is, the factor cost adjustments) are determined.

55. These changes in the value of deliveries to final demand are then distributed among the various end uses based on a percentage distribution of each producing sector's final demand among the end-use sectors. This assumes that the factor cost adjustment for any economic activity does not vary according to the identity of the customer for that activity. The separate factor cost adjustments for the various services (for example, housing) were transferred directly to the corresponding end uses. The I-O table could not be used for this purpose, since it relates only to material production in accordance with Soviet concepts.

VI. Directions of Future Research

56. The present GNP estimates for 1970, although they represent a major research effort and contain a good deal of useful information, are only part of a program of continuing research. The components of the two totals, GNP by end use and GNP by sector of origin, are used by OER as weights in calculating two indexes of real Soviet GNP, both at least partially independent of the official Soviet national income series in constant prices. In particular, the OER index of GNP by sector of origin avoids insofar as possible the use of Soviet price indexes, which are largely unexplained and are widely mistrusted by Western and Soviet economists. A subsequent report will present the indexes of growth of GNP and its components, together with a description of the methodology and sources employed.

57. Another promising area of research centers on the growing volume of I-O statistics. An attempt is being made to integrate the reconstructed I-O tables for the USSR with the OER GNP accounts. With a Soviet I-O framework extended to include the services included in GNP, the analytical usefulness of the I-O tables should be enhanced—for example, in testing the consistency and feasibility of Soviet plans. At the same time, the scrutiny of I-O information may well lead to improvements in the GNP accounts.

58. Finally, basic material must be accumulated against the day that a new benchmark set of accounts becomes necessary. Soviet planners change prices with greater frequency than in the past. Certainly, price relations are unlikely to remain undisturbed for a period as long as the time

[9] Although the new industrial prices introduced in 1966–67, excluding turnover tax, reflect real production costs more completely than did their predecessors, prices in most other sectors do not reflect interest charges adequately.

between the price reforms of 1955 and 1967. As a consequence, GNP estimates based on 1970 accounts will have to give way in time to new estimates in order to explore index number relations and to show the structure of the economy more nearly as Soviet leaders see it.

A

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APPENDIX A*

Sources for Table 1. USSR: Household Incomes, 1970

1. State wages and salaries

a. *Worker and employee wage and salary bill*

The wage and salary bill for workers and employees of 132.032 billion rubles is derived as the product of the number of wage and salary workers (90,186,000—*Narkhoz 1972*, p. 504) and their annual average wage (1,464 rubles—*Ibid.*, p. 516).

b. *Profits distributed to consumer cooperative members*

Profits distributed to consumer cooperative members are estimated at 0.027 billion rubles, 2.02% of consumer cooperatives' net profits of 1.321 billion rubles (*Ibid.*, p. 697). The share is taken as the same percentage as experienced in 1962–65, when distributions to members amounted to 68.4 million rubles (P. I. Lyuskon, editor, *50 let sovetskoy potrebitelskoy kooperatsii*, Moscow, 1967, p. 142) out of consumer cooperatives' net profits for the period of 3.389 billion rubles (*Narkhoz 1963*, p. 637; *Narkhoz 1965*, p. 757).

2. Net income of households from agriculture

a. *Money wage payments by collective farms*

(1) *Payments to collective farm members* are estimated at 14.040 billion rubles on the basis of (1) total wage payments (money plus in-kind) of 15.0 billion rubles made by collective farms to members for their work in the various forms of socialized activity—agriculture, subsidiary industrial enterprises, the housing-communal economy, cultural-welfare institutions, construction, and capital repair (*Narkhoz 1972*, p. 388) and (2) the share constituting money payments only—93.6% (V. N. Zhurikov and V. I. Solomakhin, compilers, *Spravochnik po oplate truda v kolkhozakh*, Moscow, 1973, p. 10). Of total payments, the bonuses paid from profits accounted for 1.5%, or 0.225 billion rubles (*Ibid.*, p. 11).

(2) *Payments to hired workers* from outside of agriculture (so-called "attracted workers") are estimated at 0.413 billion rubles on the basis of (1) the estimated number of hired workers employed in agricultural activity on collective farms (0.5 million) and (2) the assumption that these workers were paid the same implied annual average money wage as that earned by members (826 rubles per worker). The number of these workers is estimated on the basis of the total number employed by both collective and state farms (0.6 million—*Narkhoz 1972*, p. 406) and, in line with the past, the attribution of no more than 0.1 million to state farms (see TsSU, *Strana sovetov za 50 let*, Moscow, 1967, p. 162–163). The implied annual average money wage earned by members is calculated by dividing the total money payments (14.040 billion rubles) by the annual average number of member-workers (17.0 million—*Narkhoz 1972*, p. 406).

b. *Net income from sales of farm products*

Net income of households from sales of farm products is derived as follows:

	Billion Rubles
Gross income	9.238[1]
Sales to state procurement and state and cooperative trade organizations	3.869
Collective farm ex-village market and commission sales	4.369
Sales of livestock to collective farms	1.000
Less: Money expenses of production	0.974[1]
Purchases of materials and services	0.924
Indirect taxes	0.050
Equals: Net income from sales	8.264

[1] Derived as the sum of the parts.

Income of households from (1) sales to state procurement and state and cooperative trade organizations and (2) sales in collective farm ex-village markets and commission trade is derived for each entry as the difference between total receipts of collective farms and households from such sales and receipts of collective farms only. Data regarding total receipts of collective farms and households

*Unless otherwise specified, all data in the appendixes refer to the year 1970.

from sales to state procurement and state and cooperative trade organizations are available in TsSU, *Sel'skoye khozyaystvo SSSR, statisticheskiy sbornik*, Moscow, 1971, p. 90–91 (hereafter referred to as *Sel'skoye khozyaystvo*, 1971); the total volume of collective farm ex-village market sales is presented in *Narkhoz 1972*, p. 573; the gross volume of commission sales is available in *Narkhoz 1972*, p. 588. Net commission sales are estimated at 85% of gross commission sales. Receipts of collective farms are computed from data regarding collective farms' total income and its sources presented in *Ekonomika sel'skogo khozyaystva*, no. 7, 1972, p. 33; I. F. Chernyavskiy, *Realizatsiya sel'skokhozyaystvennoy produktsii i effektivnost' proizvodstva*, Moscow, 1974, p. 96; and S. V. Rogachev, *Ekonomicheskiye zakony i razvitiye sel'skogo khozyaystva*, Moscow, 1973, p. 31–32.

Income of households from sales of livestock to collective farms in 1970 is estimated on the basis of sales in 1969 (0.834 billion rubles—G. I. Shmelev, *Lichnoye podsobnoye khozyaystvo i yego svyazi s obshchestvennym proizvodstvom*, Moscow, 1971, p. 18). The estimate takes into account the substantial increase in livestock procurement prices paid private producers in 1970. The assumption is made that collective farms would have to match state procurement prices in order to compete with procurement organizations as potential buyers of these private livestock. While an allowance of 1 billion rubles may seem generous because of the probability that the value of sales in 1969 reflects distress sales in a poor crop year, it should be noted that Shmelev also refers to—but does not quantify—similar sales to state farms by state farm workers. Since no estimate is made for this additional source of income of households, the allowance seems acceptable.

Purchases of materials and services used in production of agricultural products are estimated at 10% of households' gross income from sales of farm products. Out of total current purchases (0.924 billion rubles), one-half (0.462 billion rubles) is assumed to represent purchases of producer goods (mixed feed, fertilizer, tools, and the like) in the state and cooperative trade net, and the remainder is assumed to account for purchases from collective farms of livestock feed, seed and other materials, and services. Household purchases of livestock feed (grain, hay, and straw) from collective farms are estimated at 0.332 billion rubles on the basis of data regarding quantities sold and prices paid in 1970 in collective farm in-village markets, the trade channel through which these current purchases are made. (See Rogachev, *op. cit.*, p. 184, 218; *Voprosy ekonomiki*, no. 1, 1973, p. 57; G. V. Kulik, *et al.*, compilers, *Spravochnik ekonomista kolkhoza i sovkhoza*, Moscow, 1970, p. 344.) Purchases of seed and other materials are arbitrarily estimated at 0.030 billion rubles. Purchases of services (rental of draft animals, trucks, and other equipment; veterinary services; and other services) are derived as 0.100 billion rubles, the difference between total current purchases from collective farms and purchases of livestock feed, seed, and other materials.

Indirect taxes paid by farm households consist largely of collective farm market fees. Livestock ownership fees have been sharply cut in a series of decrees and are assumed to have been insignificant by 1970. Market fee payments by households are estimated at 0.050 billion rubles on the basis of (1) the number of collective farmers claimed to be found daily in the markets ("700,000 collective farmers, or a matter of 250 million man-days in a year"—V. K. Logvinenko, *Kolkhoznaya sobstvennost' i voprosy yeye razvitiya po perekhode k kommunizmu*, Kiev, 1966, p. 103) and (2) the daily fee rates (D. V. Burmistrov, *Nalogi i sbory s naseleniya v SSSR*, Moscow, 1968, p. 101). Fees levied on sellers in collective farm markets vary from 10 kopeks to 1 ruble based on the space used to conduct sales. A flat rate of 20 kopeks was used for the computation on the assumption that collective farmers sell for the most part from the hand or ground rather than from wagons or trucks.

c. *Net farm income-in-kind*

(1) *Consumption-in-kind*—Soviet "farm households," which comprise the private plot agriculture of both rural and urban residents, receive an important part of their income in the form of income-in-kind, consisting of agricultural products received as labor payments-in-kind and agricultural products raised on their own plots. The value of this consumption-in-kind is estimated at 18.347 billion rubles in Tables A-1 and A-2. In Table A-1 an estimate of consumption-in-kind in physical units is derived for each of eight farm products—grain, potatoes, vegetables, sunflower seeds, meat, milk, wool, and eggs. With the exceptions of the estimates for grain and sunflower seeds—for which see sources to Table A-1—these estimates are based on data regarding gross output, nonmarketed production use (seed, feed, and waste), and off-farm ("urban") marketings (state procurements, collective farm ex-village market and commission sales, and decentralized procurements). In Table A-2 the estimate for each com-

modity is then valued at the average realized price for urban marketings, derived by valuing each type of marketing at the appropriate price and dividing the sum of the values by the sum of the quantities. In part 10, the summary of Table A-2, consumption-in-kind of each of the eight products, an allowance for consumption-in-kind of all other products, and total consumption-in-kind are shown in millions of rubles.

(2) *Investment-in-kind*, a monetary valuation of the net addition to private livestock inventories, is estimated at 0.513 billion rubles on the basis of the change in numbers of cattle, hogs, sheep, and goats and the estimated average realized price per head for each animal. The calculation is presented in Appendix D, Table D-1.

3. Income of the armed forces

a. *Military pay*

CIA estimate.

b. *Military subsistence*

CIA estimate. The entry includes food, estimated at 1.410 billion rubles, and clothing, estimated at 0.590 billion rubles.

4. Other money income currently earned and statistical discrepancy

a. *Private money income currently earned*

Private money income is estimated at 2.669 billion rubles, the sum of private earnings in construction (0.239 billion rubles—see item 6, below) and in services (2.430 billion rubles). Earnings in services are the sum of estimated private income from housing repair (0.957 billion rubles—Appendix B, item 2, b, (3)); other private repair and personal care (0.843 billion rubles—Appendix B, item 2, c, (4)); recreation services in the form of private room rentals (0.484 billion rubles—Appendix B, item 2, e, (5)); education (0.093 billion rubles—Appendix B, item 2, e, (6)); and health (0.053 billion rubles—Appendix B, item 2, c, (7)).

b. *Unidentified money income and statistical discrepancy*

The entry is derived as the difference between total income (item 9, below) and the sum of items 1; 2; 3; 4, a; 5; 6; and 8. An effort has been made to include in items 1; 2; 3; 4, a; and 8 all money incomes that are reported in Soviet sources or that can be estimated from these sources with a reasonable degree of accuracy. Money payments to the population that are known to be excluded from these estimates are travel and moving allowances of all kinds; certain types of training and expense allowances; incomes from the sale of personal property through commission stores and other outlets; payments for the collection and sale of scrap, waste paper, and the like; payments to blood donors and compensation for physical injury; and earnings from hunting and income from fishing cooperatives. Moreover, wages paid to prison labor may be entirely or partly excluded. No estimates have been made for a variety of private activities such as domestic service, taxi service, and handicraft activities. Transfer receipts other than those included in official statistical handbook data on pensions and allowances and stipends may exist. Finally, no estimate has been made for the net change in installment debt.

Two wage funds are referred to in Soviet accounting practice—the "wage fund of wage and salary workers" and the "comprehensive (*polnyy*) wage fund." (See the following studies of Soviet wage statistics: Abram Bergson, "A Problem in Soviet Statistics," *Review of Economic Statistics*, Vol. 29, no. 4, 1947, p. 234–242; Janet G. Chapman, *Real Wages in Soviet Russia since 1928*, Cambridge, 1963, p. 110–113; and Gertrude E. Schroeder in Vladimir G. Treml and John P. Hardt, editors, *Soviet Economic Statistics*, Durham, North Carolina, 1972, p. 293–294.) The wage fund of wage and salary workers refers to the aggregate wage bill that is obtained as the product of published data on average wages and annual average employment. The comprehensive wage fund is not published, and no description of its contents is available. Presumably, this fund—on which the Central Statistical Administration compiles quarterly and annual reports, based upon reports of ministries and organizations rather than upon direct enterprise reporting—includes all money incomes and is used for planning the annual "balance of incomes and expenditures of the population." Some of the items believed to be included in this "comprehensive fund" are estimated in items 1, b; 2, a; 3, a; and 4, a, above. Other items are presumably included in item 4, b.

5. Imputed net rent

Appendix B, item 2, b, (2).

6. Imputed value of owner-supplied building services

The imputed value of owner-supplied building services in construction of private housing is esti-

mated at 0.880 billion rubles on the basis of (1) the value of private housing construction (2.029 billion rubles—Appendix B, item 5, a); (2) the assumption that materials account for 35% (0.710 billion rubles) and wages for 65% (1.319 billion rubles) of the value of private housing construction (the latter share is set at approximately double the wage share in costs of the construction industry—as reported in *Narkhoz 1972*, p. 498—because of the highly labor-intensive nature of private housing construction); and (3) the assumption that of the labor component of private housing investment, payments for hired building services account for one-third (0.439 billion rubles) and the value of unpaid owner-supplied labor two-thirds (0.880 billion rubles). The assumption is further made that of purchased building services of 0.439 billion rubles, state-provided services amounted to 0.200 billion rubles, or roughly half the amount reported as outlays of the population on "construction and repair of housing" (*Ibid.*, p. 621) and private hired services the remainder, or 0.239 billion rubles.

7. Total income currently earned

Derived as the sum of items 1 through 6.

8. Transfer receipts

a. *Pensions and allowances*

Pensions and allowances are derived as 21.955 billion rubles, the difference between total outlays for social security and social insurance, including pensions (22.8 billion rubles—*Ibid.*, p. 726) and the sum of outlays (*Ibid.*, p. 728) for health resorts and sanitoria (0.551 billion rubles), outlays for kindergartens and pioneer camps (0.191 billion rubles), and miscellaneous outlays (0.103 billion rubles). The latter three categories are health expenditures. (See Appendix D, 1, c.)

b. *Stipends*

Ibid., p. 535.

c. *Interest income*

Interest income of 1.035 billion rubles is the sum of estimated interest on savings accounts (0.935 billion rubles) and loan service of subscription bonds (0.100 billion rubles). For the latter see *Narkhoz 1970*, p. 732. Interest on savings accounts is calculated at 2.2% of the population's annual average savings deposits in 1970 of 42.498 billion rubles (derived from end-1969 and end-1970 data in *Narkhoz 1970*, p. 564). The rate is the same as that calculated for 1965, when interest amounted to 0.383 billion rubles (*Vestnik statistiki*, no. 1, 1967, p. 22) on the population's annual average savings deposits of 17.217 billion rubles (derived from end-1964 and end-1965 data in *Narkhoz 1965*, p. 602).

d. *Net new bank loans to households*

Net new bank loans to households are estimated at −0.034 billion rubles, the difference between long-term loans outstanding to the population at end-1970 and at end-1969 (*Narkhoz 1970*, p. 735).

9. Total income

Equal to total outlays (Table 2, item 8).

Table A-1

USSR: Disposition of Output of Commodities Included in Farm Household Consumption-in-Kind,[1] 1970

		A	B	C	D	E	F	G	H	I	J	K	L
								Marketed Output					
						State Procurements							
Commodity	Unit	Gross Output	Used in Production (Seed, Feed, and Waste)	Total	Total	State Farms and Other State Agricultural Enterprises	Collective Farms	Private Plots of Collective Farm Members and Wage and Salary Workers	Repayment of Seed Loans	Difference Between Physical and Accounting Weight of Procurements	Collective Farm Ex-Village Market and Commission Sales	Decentralized Procurements	Farm Household Consumption-in-Kind
Grain	Thousand metric tons	186,795	102,995	80,800	73,284	35,772	35,512	0	2,000	4,512	2,004	1,000	3,000
Potatoes	Thousand metric tons	96,783	56,840	18,100	11,233	4,391	5,040	1,802	Not app.	11	6,002	854	21,843
Vegetables	Thousand metric tons	21,212	4,242	13,800	10,918	6,213	4,058	647	Not app.	Not app.	1,781	1,101	3,170
Sunflower seeds	Thousand metric tons	6,144	484	5,160	4,613	871	3,742	0	Not app.	167	380	0	500
Meat, live weight	Thousand metric tons	19,402[2]	0	14,974	12,595	5,502	5,764	1,329	Not app.	Not app.	1,701	678	4,428
Cattle	Thousand metric tons	9,250	0	7,747	6,685	3,054	3,199	432	Not app.	Not app.	686	376	1,503
Hogs	Thousand metric tons	6,318	0	4,589	3,782	1,590	1,666	526	Not app.	Not app.	611	196	1,729
Sheep and goats	Thousand metric tons	1,957	0	1,435	1,186	501	525	160	Not app.	Not app.	187	62	522
Poultry	Thousand metric tons	1,339	0	818	626	225	236	165	Not app.	Not app.	164	28	521
Other meat animals	Thousand metric tons	538	0	385	316	132	138	46	Not app.	Not app.	53	16	153
Milk and milk products expressed in terms of milk	Thousand metric tons	83,016	11,500	48,000	45,681	19,291	24,889	1,501	Not app.	696	1,048	575	23,516
Wool, grease basis, physical weight	Thousand metric tons	419	0	395	392	N.A.	N.A.	N.A.	Not app.	Not app.	3	0	24
Wool, accounting weight	Thousand metric tons	Not app.	Not app.	444	441	197	183	61	Not app.	Not app.	3	0	Not app.
Eggs	Million units	40,740	1,847	22,100	18,054	11,736	4,346	1,972	Not app.		2,522	1,524	16,793

[1] Sources:

Column A. Gross Output

For all commodities, with the exception of meat, see *Sel'skoye khozyaystvo*, 1971, as follows: grain, p. 154–155; potatoes, p. 206; vegetables, p. 211; sunflower seeds, p. 203; milk and milk products expressed in terms of milk, p. 300–301; wool, physical weight, p. 316–317; and eggs, p. 306. For meat see Table A-3.

Column B. Used in Production (Seed, Feed, and Waste)

Grain; sunflower seeds

The estimate for each commodity is derived as a residual, the difference between gross output (column A) and the sum of the total marketed output (column C) and the output consumed in-kind by farm households (column L). The entry in column B records (1) seed requirements for the area sown to each crop in the following year (1971), (2) the quantity of the crop set aside for livestock feed, and (3) the overstated tonnage—moisture and trash, weed seeds, and postharvest losses incurred in the handling of the commodity between the combine and storage facilities—that results when "bunker weight" (as measured in the harvesting machine) is used in determining the size of the harvest.

Potatoes

Potatoes used in production from the 1970 crop consist of the quantity of potatoes required to seed the area sown to the 1971 crop and the quantity allocated to livestock feed, with the latter reduced by the quantity of marketed output used for feed (which is recorded in this table in column D rather than in column B).

Seed allocation of potatoes is calculated at 19.74 million tons, the quantity required to seed 7.894 million hectares sown to potatoes in 1971 (*Narkhoz 1922–72*, p. 243) at the all-USSR actual 1967–70 average seeding rate of 25 centners per hectare (*Zakupki sel'skokhozyaystvennykh produktov*, no. 3, 1973, p. 18).

The quantity of potatoes fed to livestock from the 1970 crop is estimated at 37.6 million tons on the basis of (1) the actual quantity fed in 1970 (36.9 million tons—data provided the 1971 US Feed-Livestock Delegation by the USSR Ministry of Agriculture); (2) the quantity estimated to have been fed in 1971 (38 million tons—estimated from ministry data in line with the five-year annual average in 1966–70 but, in order to reflect the larger 1970 crop, set above the 1970 level of feeding); and (3) the assumption that the quantity fed in year n originated one-third from the crop of year n and two-thirds from the crop of year $n-1$. Thus, ⅓ of 36.9 + ⅔ of 38 = 37.6 million tons. In order to avoid double-counting, this estimate is in turn reduced by 0.5 million tons representing an allowance for potatoes fed from spoilage in supplies of the state and cooperative trade net (and hence counted in marketed output—state procurements—here). This allowance is based on claims that annually about 10% of procurements are wasted and that about 40% of these losses are salvaged for livestock feed (N. A. Letov, editor, *Organizatsiya i planirovaniye otrasley narodnogo khozyaystva*, Issue 13, Kiev University, 1969, p. 130).

Vegetables

The entry for column B is an estimate of vegetables fed to livestock calculated at 20% of gross output of vegetables. This share can be substantiated for several years based on actual on-farm feeding of vegetables by collective and state farms (F. T. Zemlyanskiy, *Ekonomika podsobnykh predpriyatiy i promyslov v kolkhozakh*, Moscow, 1971, p. 195–196) and a statement regarding the general level of vegetable feeding by the private sector (P. A. Ignatovskiy, *Sotsial'no-ekonomicheskiye izmeneniya v sovetskoy derevne*, Moscow, 1966, p. 383). Not included in this estimate is the quantity of vegetables fed from spoilage in supplies of the state and cooperative trade net (recorded in this table in marketed output—state procurements). Evidence indicates that annually about 7% of the vegetables procured spoil and that about 40% of these losses are salvaged for livestock feed (Letov, *op. cit.*).

Milk and milk products expressed in terms of milk

Official data regarding the amount of whole milk fed to livestock by all of agriculture in 1970 are from *Gosudarstvennyy pyatiletniy plan razvitiya narodnogo khozaystva SSSR na 1971–1975 gody*, Moscow, 1972, p. 175 (hereafter referred to as *Gosudarstvennyy pyatiletniy plan 1971–1975*).

Eggs

The number of eggs used in production is estimated as the number of eggs needed for complete replacement of layers using a hatch rate of 65%.

Column C. Marketed Output, Total

For all commodities, with the exceptions of meat and wool, accounting weight, see *Narkhoz 1922–72*, p. 226. Total marketed output of meat, live weight, is estimated on the basis of (1) total marketed output of meat, slaughter weight (*Sel'skoye khozyaystvo*, 1971, p. 49); (2) the percentage share of the total marketed by each producer (*Narkhoz 1922–72*, p. 227); and (3) overall dressing percentages for each producer (derived in Table A-3). This calculation is set out below:

	(1)	(2)	(3)	(4)
	Slaughter Weight			
	Percent	Million Tons	Dressing Percentage	Live Weight[1] (Million Tons)
Total marketed output of meat	100	9,400	—	14,974
State farms and other state agricultural enterprises	41	3,850	62.3	6,180
Collective farms	42	3,950	62.3	6,340
Private producers	17	1,600	65.2	2,454

[1] Column 2 divided by column 3, except for the column's total entry, which was derived as the sum of the parts.

Total marketed output of meat by type is derived as the sum of state procurements (column D), sales in collective farm ex-village markets and commission trade (column J), and decentralized procurements (column K). Marketed output of wool, accounting weight, is estimated on the basis of (1) data for marketed output of wool, physical weight, and (2) the assumption that physical weight was 88.9% of accounting weight (the relationship obtaining for wool procurements presented in *Narkhoz 1970*, p. 282).

Column D. State Procurements, Total

For all commodities, with the exceptions of meat by type and wool, physical weight, see *Sel'skoye khozyaystvo*, 1971, as follows: grain, p. 54–55; potatoes, p. 206; vegetables, p. 211; sunflower seeds, p. 203; meat, p. 74–75; milk and milk products expressed in terms of milk, p. 78–79; wool, accounting weight, p. 86–87; and eggs, p. 82–83. State procurements of meat by type are derived as the sum of state procurements from state farms and other state agricultural enterprises (column E), collective farms (column F), and private producers (column G). For wool, physical weight, see *Narkhoz 1970*, p. 282.

Column E. State Procurements from State Farms and Other State Agricultural Enterprises

For all commodities, with the exceptions of meat by type, see *Sel'skoye khozyaystvo*, 1971, as follows: grain, p. 620 (data in source were reduced by 1 million tons in order to show the repayment of seed loans separately in column H); potatoes and vegetables, p. 623; sunflower seeds, p. 622; meat and milk and milk products expressed in terms of milk, p. 638–639; wool, accounting weight, and eggs, p. 640–641. Total meat procurements from state farms and other state agricultural enterprises were differentiated by type of meat on the basis of the assumption that procurements would be structured as was socialized sector meat production, live weight (structure from Table A-3).

Column F. State Procurements from Collective Farms

For all commodities, with the exceptions of meat by type, see *Sel'skoye khozyaystvo*, 1971, as follows: grain, p. 531 (data in source were reduced by 1 million tons in order to show the repayment of seed loans separately in column H); potatoes and vegetables, p. 534–535; sunflower seeds, p. 533; meat and milk and milk products expressed in terms of milk, p. 550–551; wool, accounting weight, and eggs, p. 552–553. Total meat procurements from collective farms were differentiated by type of meat on the basis of the assumption that procurements would be structured as was socialized sector meat production, live weight (structure from Table A-3).

Column G. State Procurements from Private Plots of Collective Farm Members and Wage and Salary Workers

The estimate for each commodity, with the exceptions of meat by type, is derived as the difference between total procurements (column D) and the sum of procurements from state farms and other state agricultural enterprises and from collective farms (columns E, F, and H, where applicable). Total meat procurements from private producers were differentiated by type of meat on the basis of the assumption that procurements would be structured as was private sector meat production, live weight (structure from Table A-3).

Column H. Repayment of Seed Loans

The general size of annual seed loans is estimated in line with the extension of 2 million tons in early 1965 revealed by Brezhnev at the March 1965 plenum on agriculture (*Plenum tsentral'nogo komiteta kommunisticheskoy partii sovetskogo soyuza, 24–26 March 1965, stenograficheskiy otchet*, Moscow, 1965, p. 10) and the last available explicit evidence on these loans—an extension of 1.7 million tons of seed grain to collective and state farms announced in March of 1968 (FBIS, *Daily Report Soviet Union*, 28 March 1968, cc 4). The loans are here arbitrarily allocated to state farms and collective farms in equal shares.

Column I. Difference Between Physical and Accounting Weight Procurements

Official data for procurements of vegetables, meat, and eggs are given in physical weight. Official data for procurements of grain, potatoes, sunflower seeds, milk, and wool are given in accounting weight—that is after adjustment (addition or subtraction) for divergence of the quality of the products from established standards. (See *Sel'skoye khozyaystva*, 1971, p. 682.) For example, in the case of procured milk, all quantities are expressed in terms of tons of a standard butterfat content; in the case of grain, adjustment is made to a standard content of moisture and extraneous matter.

In order to array procurement data that are in accounting weight with official gross output and marketed output data that are in physical weight, some approximation of the size of this accounting adjustment must be made. Though data regarding the actual relationships of accounting weight to physical weight are not available for commodities for the whole of agriculture, these data have been published for state farms for 1960–67 (L. N. Kassirov, *Khozraschet i tseny v sotsialisticheskom sel'skom khozyaystve*, Moscow, 1969, p. 158), and the eight-year average of these relationships (accounting weight expressed as a percent of physical weight) is used to convert data in accounting weight to physical weight for each commodity (where applicable). In turn, the difference between the derived physical weight data and the official accounting weight data is entered in column I. Thus, for grain, accounting weight procurements are assumed to equal 94.2% of physical weight; potatoes, 99.9%; sunflower seeds, 96.5%; and milk and milk products expressed in terms of milk, 98.5%. Wool is handled differently because total procurement data are available in both measures, and in turn, total marketed output may be expressed in either measure.

Column J. Collective Farm Ex-Village Market and Commission Sales

Collective farm ex-village market trade refers to sales made by farm producers to the nonfarm population at uncontrolled prices. Commission trade refers to sales of surplus agricultural commodities accepted by consumer cooperatives from producers for sale on commission. The estimate for each commodity, with the exceptions of meat by type, is derived as a residual, the difference between total marketed (column C) and the sum of total procurements, the accounting difference, and decentralized procurements (columns D, I, and K). Total sales of meat were differentiated by type of meat on the basis of the assumptions that (1) the total consists of 576,000 tons sold by collective farms (collective farms' total marketed output of meat, 6,340 thousand tons, less their state procurements, 5,764 thousand tons) and of 1,125,000 tons sold by private producers (private producers' total marketed output of meat, 2,454 thousand tons, less their state procurements, 1,329 thousand tons) and (2) sales by these producers could be assumed structured as was their production (structures from Table A-3). This methodology assumes that state farms and other state agricultural enterprises do not sell in collective farm markets and that collective farms and private producers do not market by means of decentralized procurements.

Column K. Decentralized Procurements

Decentralized procurements are minor procurements by consumer cooperatives for public dining and for supplementary food supplies to the population through the trade net. The estimate for each commodity, with the exceptions of grain, sunflower seeds, and meat by type, is derived as a residual, the difference between total marketed output of state farms and other state agricultural enterprises (*Narkhoz 1972*, p. 296–297) and the sum of their state procurements (column E) and their share of the accounting difference (data of column I were attributed to state farms and other state agricultural enterprises according to their share in total procurements of the product). The grain entry is set at an allowance of 1 million tons; the sunflower seeds entry is assumed to be zero. Total decentralized procurements of meat were differentiated by type of meat on the basis of the assumption that sales could be assumed structured as was socialized sector meat production, live weight (structure from Table A-3).

Column L. Farm Household Consumption-in-Kind

The estimate for each commodity, with the exceptions of grain and sunflower seeds, is derived as a residual, the difference between gross output (column A) and the sum of the quantity used in production (column B) and the quantity marketed (column C). The entry for sunflower seeds is arbitrarily set at half a million tons, approximately half the quantity consumed in-kind in 1961. (See M. S. Abryutina, *Sel'skoye khozyaystvo v sisteme balansa narodnogo khozyaystva*, Moscow, 1965, p. 116; *Narkhoz 1962*, p. 233, 272.)

Grain consumed in-kind is approximated on the basis of an estimate of grain available for farm households' use in 1970 and an estimated disposition of this supply. The grain supply at the disposal of farm households is estimated at about 9 million tons, consisting of distributions for labor pay in collective farms (1.5 million tons—V. N. Kosinskiy, *Raspredeleniye dokhodov v kolkhozakh*, Moscow, 1971, p. 69); additional sales by collective farms to collective farmers at special prices (5.6 million tons—*Ibid.* and Rogachev, *op. cit.*, p. 184); and own production (1.9 million tons—*Sel'skoye khozyaystvo*, 1971, p. 154–155, 522–523, 610 611). Disposition of this supply is estimated as follows: 0.2 million tons for seed use (1.08 million hectares seeded at 1.7 centners per hectare); no sales to state procurement organizations; 5.8 million tons, 65% of the remainder, fed to livestock; and 3 million tons, the remaining 35%, consumed in-kind by farm households. The estimates of grain fed to livestock and grain consumed in-kind by farm households take into account (1) the traditional requirement of 4–6 million tons of feed grain to maintain the livestock holdings of collective farm members (see V. A. Morozov, *Trudoden', den'gi, i torgovlya na sele*, Moscow, 1965, p. 149–150) and (2) the sharp decline in consumption-in-kind of grain by farm households in 1960–70 associated with the rise in money pay of labor, the attendant drop in distributions of grain as labor payment-in-kind, and the replacement of in-kind consumption with purchases of bread and bakery products in the state and cooperative trade net. Indeed, today 80% of the rural population's need for bread is reportedly met by baked products of cooperative and state bakeries. (*Sel'skaya zhizn'*, 3 July 1973, p. 3.)

[2] Net of increment of livestock herds.

Table A-2

USSR: Valuation of Farm Household Consumption-in-Kind,[1] 1970

	1. Grain			2. Potatoes		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	35,772	93	3,326.8	4,391	81	355.7
(2) Procurements from collective farms	35,512	101	3,586.7	5,040	70	352.8
(3) Procurements from private plots of collective farm members and wage and salary workers	0	—	—	1,802	70	126.1
(4) Repayment of seed loans	2,000	0	0	Not app.	—	—
(5) Difference between physical and accounting weight of procurements	4,512	0	0	11	0	0
(6) Collective farm ex-village market and commission sales	2,004	248	497.0	6,002	179	1,074.4
(7) Decentralized procurements	1,000	248	248.0	854	179	152.9
(8) Total marketed output	**80,800**	**103**	**7,658.5**	**18,100**	**114**	**2,061.9**
b. Farm household consumption-in-kind	3,000	103	309.0	21,843	114	2,490.1

	3. Vegetables			4. Sunflower Seeds		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	6,213	101	627.5	871	173	150.7
(2) Procurements from collective farms	4,058	112	454.5	3,742	182	681.0
(3) Procurements from private plots of collective farm members and wage and salary workers	647	112	72.5	0	—	—
(4) Difference between physical and accounting weight of procurements	Not app.	—	—	167	0	0
(5) Collective farm ex-village market and commission sales	1,781	381	678.6	380	273	103.7
(6) Decentralized procurements	1,101	381	419.5	0	273	0
(7) Total marketed output	**13,800**	**163**	**2,252.6**	**5,160**	**187**	**935.4**
b. Farm household consumption-in-kind	3,170	163	516.7	500	187	93.5

Table A-2 (Continued)

USSR: Valuation of Farm Household Consumption-in-Kind,[1] 1970

	5. Meat, Live Weight[2]			5A. Cattle		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	5,502	1,446	7,956.3	3,054	1,423	4,345.8
(2) Procurements from collective farms	5,764	1,524	8,786.2	3,199	1,534	4,907.3
(3) Procurements from private plots of collective farm members and wage and salary workers	1,329	1,349	1,792.8	432	1,292	558.1
(4) Difference between physical and accounting weight of procurements	Not app.	—	—	Not app.	—	—
(5) Collective farm ex-village market and commission sales	1,701	1,528	2,598.8	686	1,198	821.8
(6) Decentralized procurements	678	1,427	967.2	376	1,198	450.4
(7) Total marketed output	**14,974**	**1,476**	**22,101.4**	**7,747**	**1,431**	**11,083.4**
b. Farm household consumption-in-kind	4,428	1,514	6,702.5	1,503	1,431	2,150.8

	5B. Hogs			5C. Sheep and Goats		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Tbousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	1,590	1,576	2,505.8	501	891	446.4
(2) Procurements from collective farms	1,666	1,614	2,688.9	525	989	519.2
(3) Procurements from private plots of collective farm members and wage and salary workers	526	1,417	745.3	160	824	131.8
(4) Difference between physical and accounting weight of procurements	Not app.	—	—	Not app.	—	—
(5) Collective farm ex-village market and commission sales	611	1,850	1,130.4	187	984	184.0
(6) Decentralized procurements	196	1,850	362.6	62	984	61.0
(7) Total marketed output	**4,589**	**1,620**	**7,433.0**	**1,435**	**935**	**1,342.4**
b. Farm household consumption-in-kind	1,729	1,620	2,801.0	522	935	488.1

Table A-2 (Continued)

USSR: Valuation of Farm Household Consumption-in-Kind,[1] 1970

	5D. Poultry			5E. Other Meat Animals		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	225	1,905	428.6	132	1,740	229.7
(2) Procurements from collective farms	236	1,825	430.7	138	1,740	240.1
(3) Procurements from private plots of collective farm members and wage and salary workers	165	1,683	277.7	46	1,740	80.0
(4) Difference between physical and accounting weight of procurements	Not app.	—	—	Not app.	—	—
(5) Collective farm ex-village market and commission sales	164	2,158	353.9	53	2,051	108.7
(6) Decentralized procurements	28	2,158	60.4	16	2,051	32.8
(7) Total marketed output	**818**	**1,896**	**1,551.3**	**385**	**1,796**	**691.3**
b. Farm household consumption-in-kind	521	1,896	987.8	153	1,796	274.8

	6. Milk and Milk Products Expressed in Terms of Milk			7. Wool		
	Quantity	Price	Value	Quantity	Price	Value
	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles	Thousand Metric Tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	19,291	194	3,742.5	197	4,450	876.6
(2) Procurements from collective farms	24,889	192	4,778.7	183	4,937	903.5
(3) Procurements from private plots of collective farm members and wage and salary workers	1,501	174	261.2	61	4,443	271.0
(4) Difference between physical and accounting weight of procurements	696	0	0	Not app.	—	—
(5) Collective farm ex-village market and commission sales	1,048	316	331.2	3	4,443	13.3
(6) Decentralized procurements	575	316	181.7	0	4,443	0
(7) Total marketed output	**48,000**	**196**	**9,295.3**	**444**	**4,650**	**2,064.4**
b. Farm household consumption-in-kind	23,516	196	4,609.1	24	4,650	111.6

Table A-2 (Continued)

USSR: Valuation of Farm Household Consumption-in-Kind,[1] 1970

	8. Eggs			9. All Other		
	Quantity	Price	Value	Quantity	Price	Value
	Million Units	Rubles per Thousand Units	Million Rubles	Thousand Metric tons	Rubles per Metric Ton	Million Rubles
a. Marketed output						
(1) Deliveries of state farms and other state agricultural enterprises	11,736	103	1,208.8	Not app.	—	—
(2) Procurements from collective farms	4,346	82	356.4	Not app.	—	—
(3) Procurements from private plots of collective farm members and wage and salary workers	1,972	74	145.9	Not app.	—	—
(4) Difference between physical and accounting weight of procurements	Not app.	—	—	Not app.	—	—
(5) Collective farm ex-village market and commission sales	2,522	126	317.8	Not app.	—	—
(6) Decentralized procurements	1,524	126	192.0	Not app.	—	—
(7) Total marketed output	**22,100**	**100**	**2,220.9**	**Not app.**	**—**	**—**
b. Farm household consumption-in-kind	16,793	100	1,679.3	Not app.	—	1,835

10. Summary[3]

	Million Rubles
Grain	309
Potatoes	2,490
Vegetables	517
Sunflower seeds	94
Meat	6,702
Milk and milk products expressed in terms of milk	4,609
Wool	112
Eggs	1,679
All other	1,835
Total	**18,347**

[1] Sources:

Quantities

All quantity data are from Table A-1, columns C through L.

Prices

Average realized prices of marketings, derived in item *a* of this table, are used in item *b* to value commodities consumed in-kind by farm households. These prices are derived by valuing each type of marketing at the appropriate price and dividing the sum of the values by the sum of the quantities marketed (excluding those parts of marketed output that are either non-monetary transactions—the return of seed grain loans—or accounting entries—the difference between procurements expressed in physical weight and procurements expressed in accounting weight).

a. State Procurement Prices

(1) State Farm Procurement Prices

Prices for grain, potatoes, cattle, hogs, sheep and goats, poultry, milk, and eggs are from L. N. Sineva, *Rentabel'nost' sovkhoznogo proizvodstva*, Moscow, 1973, p. 72. Prices for vegetables, sunflower seeds, and wool were derived on the basis of (1) data expressing the 1970 procurement prices received by state farms as a percent of the 1966 procurement prices realized by these producers (*Ekonomika sel'skogo khozyaystva*, no. 7, 1972, p. 33) and (2) the 1966 prices (A. M. Yemel'yanov, *Khozyaystvennyy raschet v kolkhozakh i sovkhozakh*, Moscow, 1968, p. 23; the 1965 wool price from *Ekonomika sel'skogo khozyaystva*, no. 2, 1967, p. 11, is assumed applicable). The price for other meat animals is an average of category I and category II procurement prices for rabbits (V. F. Tarasevich and A. I. Gudaykin, *Spravochnik ekonomista kolkhoza i sovkhoza*, Minsk, 1974, p. 165).

(2) Collective Farm Procurement Prices

All prices, with the exception of that for other meat animals (and "meat, live weight"—see note 2. below), are from *Voprosy ekonomiki*, no. 1, 1973, p. 57. An average of category I and II procurement prices for rabbits was again used as a price for other meat animals (Tarasevich and Gudaykin, *op. cit.*).

(3) Private Producer Procurement Prices

Few actual prices paid by the state for procurements from private producers are available. Given the paucity of hard facts, any attempt to estimate these prices must proceed largely from an understanding of the rules. Under the March 1965 Brezhnev program for agriculture, procurement prices paid all producers were raised, and additional payments were authorized for above-plan procurements. The latter payments were not extended to private producers. In the succeeding five years many adjustments were made to procurement prices. In the case of livestock products, procurement prices for poultry were raised, effective April 1969 for the socialized sector. In February 1970, the new poultry prices were extended to the private sector as well. At the agricultural plenum of July 1970, numerous procurement price increases were announced for livestock products and were made effective from 1 May 1970. Among increases introduced were new, higher base prices for all livestock products that incorporated the earlier "additional" payment into the base and in addition offered a new 50% *nadbavka* (increment) to the base price for above-plan deliveries. While the new base prices were extended to all producers, private producers were again excluded from receiving the new additional payments.

Against this background, 1970 procurement prices paid private producers for potatoes and vegetables were assumed to be equal to procurement prices received by collective farms for these commodities. Prices for wool and eggs were estimated at 10% below those received by collective farms in 1970 on the assumption that at least 10% of the collective farm procurement price was attributable to additional payments for above-plan deliveries. The procurement price for milk was estimated on the assumptions that (1) procurements made in the first third of the year (that is, before 1 May) were purchased by the state at about 90% of the procurement price realized by collective farms in 1969 (V. A. Karavayev and A. V. Pikul'kin, *Gosudarstvennyye zagotovki i sbyt sel'skokhozyaystvennoy produktsii*, Moscow, 1971, p. 54) while procurements made in the remaining two-thirds of the year were purchased at the new base procurement price (*Ekonomika sel'skogo khozyaystva*, no. 7, 1972, p. 34), and (2) one-third of the year's procurements was made in the first third of the year and two-thirds in the remainder of the year. Thus, $(159 \times 90\% \times 33.3\%) + (190 \times 66.7\%) = 174$ rubles per ton.

Procurement prices paid private producers for cattle, hogs, sheep, and goats were estimated on the assumption that procurements made in the first third of the year were purchased by the state at the level of 1968 prices realized by private producers and that procurements made in the remaining two-thirds of the year were purchased at about 90% of the procurement price realized by collective farms in the last two-thirds of 1970 (thus attributing at least 10% of the collective farm procurement price to additional payments for above-plan deliveries—increments, as noted above, not paid private producers). Again the assumption was made that one-third of the year's procurements was made in the first third of the year and two-thirds in the remainder of the year. The poultry price paid collective farms for their procurements in 1969 was assumed applicable as the price paid private producers for the whole of 1970, since, as noted above, poultry prices obtaining for the socialized sector from April 1969 were also extended to the private sector as of 1 February 1970. Since no *nadbavki* existed for poultry prices in 1969, no adjustment to the price was needed. Finally, the procurement price for rabbits was again used to value other meat animals.

Sources are as follows: for cattle and hog prices received by private producers in 1968, see *Seriya ekonomicheskayo*, no. 6, 1970, p. 33. The sheep price is estimated on the assumption that the 1968 sheep procurement price realized by collective farms (*Voprosy ekonomiki*, no. 8, 1970, p. 43) was, as in the case of cattle, 130%–135% of the price paid private producers. Procurement prices paid collective farms in 1969 are from Karaveyev and Pikul'kin, *op. cit.*, and 1970 procurement prices paid collective farms are from *Voprosy ekonomiki*, no. 1, 1973, p. 57. The rabbit price is from Tarasevich and Gudaykin, *op. cit.*

The derivation of the livestock procurement prices paid private producers is set out below.

Cattle:

(i) To calculate the cattle procurement price received by collective farms in the last two-thirds of 1970:

1,534 = procurement price realized by collective farms for the whole of 1970

1,303 = 1969 procurement price realized by collective farms

$0.333(1{,}303) + 0.667x = 1{,}534$

$x = 1{,}649$ rubles per ton, live weight

(ii) To calculate the 1970 procurement price paid private producers for cattle:

907 = 1968 procurement price realized by private producers

1,649 × 90%, or 1,484 = estimated price paid private producers for procurements made in final two-thirds of 1970

$0.333(907) + 0.667(1{,}484) = 1{,}292$ rubles per ton, live weight

Hogs:

(i) To calculate the hog procurement price received by collective farms in the last two-thirds of 1970:

1,614 = procurement price realized by collective farms for the whole of 1970

1,495 = 1969 procurement price realized by collective farms

$0.333(1,495) + 0.667x = 1,614$

$x = 1.673$ rubles per ton, live weight

(ii) To calculate the 1970 procurement price paid private producers for hogs:

1,238 = 1968 procurement price realized by private producers

1,673 × 90%, or 1,506 = estimated price paid private producers for procurements made in final two-thirds of 1970

$0.333(1,238) + 0.667(1,506) = 1,417$ rubles per ton, live weight

Sheep and goats:

(i) To calculate the sheep and goats procurement price received by collective farms in the last two-thirds of 1970:

989 = procurement price realized by collective farms for the whole of 1970

871 = 1969 procurement price realized by collective farms

$0.333(871) + 0.667x = 989$

$x = 1,048$ rubles per ton, live weight

(ii) To calculate the 1970 procurement price paid private producers for sheep and goats:

585 = approximated 1968 procurement price realized by private producers

1,048 × 90%, or 943 = estimated price paid private producers for procurements made in final two-thirds of 1970

$0.333(585) + 0.667(943) = 824$ rubles per ton, live weight

b. Collective Farm Ex-Village Market-Commission Sales Prices

The estimated all-USSR collective farm ex-village market-commission sales price for each commodity, with the exceptions of meat (live weight), meat by type, sunflower seeds, and wool, was derived for 1970 on the basis of (1) the commodity's 1960 all-USSR collective farm market-commission sales price (estimated by Jerzy F. Karcz in his Appendix to "Quantitative Analysis of the Collective Farm Market," *American Economic Review*, Vol. LIV, no. 4, June 1964) and (2) an estimated price index for the commodity derived by extending an official 1960–68 price index for the commodity in collective farm markets of 264 cities (*Narkhoz 1968*, p. 655) through 1970 by means of the 1968–70 increase in the commodity's average commission sales price (*Ibid.*, p. 622; *Narkhoz 1972*, p. 588).

The price for meat, slaughter weight, thereby derived, was in turn expressed on a live weight basis by dividing (1) the total value of collective farm market-commission sales of meat, slaughter weight [derived as the product of the quantity sold (1,093 thousand tons, slaughter weight—converted from live weight meat-by-type data of Table A-1, column J, using dressing percentages of Table A-3, column 2) and the slaughter weight price for collective farm market-commission sales of meat (2,378 rubles per ton)] by (2) the quantity sold expressed in live weight, 1,701 thousand tons (Table A-1, column J). Implicit here is the assumption that the unusables—that is, the difference between live weight and slaughter weight—are of zero value.

In turn, the total meat (live weight) price was differentiated by type of meat on the basis of (1) collective farm market prices received by collective farms for each type of meat (live weight) in 1970 (the prices were calculated for cattle, hogs, and poultry from Rogachev, *op. cit.*, p. 184; approximated for sheep on the basis of the cattle price and the relationship between sheep and cattle prices received by collective farms in collective farm markets in 1969—Karavayev and Pitul'kin, *op. cit.*; and set for "other meat animals" below the poultry price according to the relationship between poultry and rabbit procurement prices); (2) the relation of these prices for types of meat to a derived average collective farm market price for all meat (calculated by weighting these live weight prices by live weight quantities sold in collective farm markets in 1970—Table A-1, column J); and (3) the assumption that these relatives could, in turn, be applied to the estimated all-USSR collective farm market-commission sales price for live weight meat.

The collective farm market price for sunflower seeds was set at 50% above the procurement price received by collective farms, in line with the relationship between these prices in 1971 (V. P. Boyev, *Sovershenstvovaniye zakupochnykh tsen na sel'skokhozyaystvennyyu produktsiyu*, Moscow, 1974, p. 155; Chernyavskiy, *op. cit.*, p. 107).

The collective farm market price for wool was assumed equal to the procurement price paid private producers.

c. Decentralized Procurement Prices

Collective farm market prices were assumed applicable for pricing decentralized procurements.

Values

For the itemized products (excluding "meat, live weight"—see note 2, below), the value for each line item, with the exception of total marketed output, is the product of the quantity and the price. The value of total marketed output is derived as the sum of the parts.

The total value of farm household consumption-in-kind is estimated on the assumption that consumption-in-kind of the itemized commodities—grain, potatoes, vegetables, sunflower seeds, meat, milk and milk products, wool, and eggs—represented at least 90% of total consumption-in-kind by farm households. The remaining 10%, or "all other" consumption-in-kind, is assumed to include products such as fruits, nuts, berries, honey, mushrooms, fresh water fish, game animals and their products, tobacco and makhorka, tea, and herbs.

[2] "Meat, live weight" is a summary of parts 5A through 5E. Prices are derived by dividing the value data of part 5 by the quantity data of part 5.

[3] Value data of item *b* for parts 1 through 9 of this table.

Table A-3

USSR: Meat Production—Slaughter Weight, Live Weight—by Type and by Producer, 1970

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All Producers				Socialized Sector				Private Sector			
	Slaughter Weight[1] (Thousand Tons)	Dressing Percentage[2]	Live Weight		Slaughter Weight[5] (Thousand Tons)	Dressing Percentage[2]	Live Weight		Slaughter Weight[7] (Thousand Tons)	Dressing Percentage[2]	Live Weight	
			Thousand Tons[3]	Percent[4]			Thousand Tons[6]	Percent[4]			Thousand Tons[8]	Percent[4]
Meat production, total	12,278	63.3	19,402	100.0	7,981	62.3	12,816	100.0	4,297	65.2	6,586	100.0
Beef	5,393	58.3	9,250	47.7	4,146	58.3	7,111	55.5	1,247	58.3	2,139	32.5
Pork	4,543	71.9	6,318	32.5	2,666	71.9	3,708	28.9	1,877	71.9	2,610	39.6
Mutton and kid	1,002	51.2	1,957	10.1	597	51.2	1,166	9.1	405	51.2	791	12.0
Poultry	1,071	80	1,339	6.9	418	80	523	4.1	653	80	816	12.4
Other	269	50	538	2.8	154	50	308	2.4	115	50	230	3.5

[1] *Sel'skoye khozyaystvo*, 1971, p. 290.

[2] Dressing percentages for beef, pork, and mutton and kid are from I. Ye. Mampel' and N. Ya. Rayskiy, *Spravochnik po priyemke i soderzhaniyu skota na myasokombinatakh*, Moscow, 1971, p. 180–184; poultry and other (rabbit data) from A. M. Shafran, *Tablitsy perescheta zhivogo besa skota v uboynyy i uboynogo v zhivoy*, Moscow, 1967, p. 10. The dressing percentage for total meat is derived by dividing total meat production, slaughter weight, by total meat production, live weight.

[3] Column 1 divided by column 2, except for the column's total entry, which is derived as the sum of the parts.

[4] Live weight production expressed in percent.

[5] *Sel'skoye khozyaystvo*, 1971, p. 291.

[6] Column 5 divided by column 6, except for the column's total entry, which is derived as the sum of the parts.

[7] Column 1 minus column 5.

[8] Column 9 divided by column 10, except for the column's total entry, which is derived as the sum of the parts.

B

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APPENDIX B

Sources for Table 2. USSR: Household Outlays, 1970

1. Retail sales of goods for consumption

a. *State, cooperative, and commission sales*

State and cooperative retail sales and commission sales to the population of goods for consumption are estimated as follows:

	Billion Rubles
Total state and cooperative retail sales, including commission sales	155.208
Less:	
Sales to institutions	7.177
Producer goods sold to farm households	0.462
Building materials sold to households	1.221
Kerosene	0.131
Services included in retail sales	2.842
Film rentals	0.195
Equals:	
Sales of goods to the population for consumption	143.180

Data regarding total sales are from *Narkhoz 1972*, p. 577; institutional purchases, from V. I. Nikitin, *Planirovaniye roznichnogo tovarooborota*, Moscow, 1972, p. 52.

Sales of producer goods to farm households are estimated in Appendix A, item 2, b.

Building materials purchased by households are derived as the difference between (1) total retail sales of building materials, 1.550 billion rubles (lumber, cement, and other construction materials, 1.500 billion rubles, and window glass, 0.050 billion rubles—*Narkhoz 1972*, p. 585) and (2) estimated purchases by institutions (0.329 billion rubles). The latter estimate is calculated at 21.2% of the total on the basis of the 1968–69 share of institutional purchases in total retail sales of lumber and building materials (calculated from A. Zaytseva and G. Moroz in *Vestnik statistiki*, no. 5, 1971, p. 37). Household purchases of building materials are accounted for in outlays for repair and investment (2, b, (3), and 5, a, below).

Kerosene sales are from *Narkhoz 1972*, p. 585. These sales are recorded in utilities (2, c, (1), below).

Services included in retail sales are derived by summing official statistical handbook data for a list of categories of "productive services" identified by Gosplan as being included in retail trade turnover.* (See Gosplan SSSR, *Metodicheskiye ukazaniya k sostavleniyu gosudarstvennogo plana razvitiya narodnogo khozyaystva SSSR*, Moscow, 1969, p. 452—hereafter referred to as *Metodicheskiye ukazaniya*, 1969.) These services, with the exception of "repair and construction of housing services" (which are accounted for in item 2, b, (3), below, and Table 1, item 6), are reflected in repair and personal care (2, c, (4), below). Data from *Narkhoz 1972*, p. 621, together with an estimate for "other productive services," are as follows:

	Million Rubles
Total	**2,841.5**
Repair and custom making of shoes	349.9
Repair and custom sewing of clothing	1,045.1
Appliance and instrument repair	442.8
Repair and manufacture of furniture	100.6
Dry cleaning	95.1
Repair, custom making, and knitting of knitted garments	120.2
Repair and construction of housing by orders from the population	394.7
Other productive services	293.1[1]

[1] Other productive services are estimated at 50% of the value of services not explicitly identified in *Narkhoz 1972*. The share represents an extension of the 1965–67 trend in productive services not explicitly identified, based on the data for all services given in *Narkhoz 1968*, p. 664, and the data for nonproductive services given in *Narkhoz 1967*, p. 773.

Film rentals are estimated at 0.195 billion rubles on the basis of the statement by V. Rutgayzer

*The term *productive services* generally includes repair and custom manufacture, although drycleaning and dyeing, laundries, and photography shops are also classified as "productive." Nonproductive services include public baths and showers, barber and beauty shops, rental offices, janitorial services, pawnshops, funeral services, and information bureaus.

(*Planovoye khozyaystvo*, no. 3, 1974, p. 110) that film rentals represented 1.2% of the "gross output of trade and public dining" in 1970. The gross output of trade and public dining can be derived as 16.248 billion rubles by dividing the gross output of trade and public dining, excluding film rentals (16.053 billion rubles) by 98.8%. The gross output of trade and public dining, excluding film rentals (16.053 billion rubles) is established from a percentage breakdown of "total services (excluding science and administration)" given by Rutgayzer (*Ibid.*, p. 112) and a control total for the breakdown of 71.667 billion rubles. The control total was derived on the basis of (1) an estimate of "nonproductive services (excluding science and administration)" of 48.447 billion rubles and (2) the share held by these services in "total services (excluding science and administration)," 67.6% (*Ibid.*). The value of nonproductive services (excluding science and administration) was derived as follows: Rutgayzer presents a concept of Soviet gross national production of goods and services (*national'nogo proizvodstva material'nykh blag i uslug* (NPBU)), which is defined as the sum of gross social product (91.7% of the total) and the monetary value of services in the "nonproductive sphere" (8.3% of the total—*Ibid.*). Given official statistical handbook data for gross social product in 1970 of 644 billion rubles (*Narkhoz 1972*, p. 59), NPBU can be calculated at 702.290 billion rubles (644 ÷ 91.7%) and nonproductive services at 58.290 billion rubles (702.290 × 8.3%). The labor and capital components of expenditures on "science and administration" amounted to 9.843 billion rubles in 1970 (Rutgayzer, *op. cit.*, p. 112). Thus, the value of nonproductive services (excluding science and administration) equals 48.447 billion rubles (58.290 − 9.843).

In order to avoid double-counting, film rentals, which are included in the gross output of trade and public dining and are also counted in money expenditures of the population on movies (*Ibid.*, p. 110), are here removed and are recorded in recreation and culture (2, c, (5), below).

b. *Collective farm ex-village market sales*

Purchases by the population in collective farm ex-village markets are estimated at 3.835 billion rubles, the difference between total collective farm ex-village market sales (4.2 billion rubles—*Narkhoz 1972*, p. 573) and estimated purchases by institutions (0.365 billion rubles). The latter estimate represents 8.7% of total collective farm ex-village market sales, the share established on the basis of (1) the claim that institutional purchases in the collective farm ex-village market amounted to 0.342 billion rubles during the last half of 1968 and the first half of 1969 (Zaytseva and Moroz, *op. cit.*, p. 38) and (2) an estimate of total collective farm market sales for that period of 3.950 billion rubles (derived as the average of total sales in 1968 of 3.8 billion rubles and in 1969 of 4.1 billion rubles—*Narkhoz 1969*, p. 597).

2. Consumer services

a. *Trade union and other dues*

Dues are estimated at 2.092 billion rubles, the sum of trade union dues (1.376 billion rubles), Communist Party dues (0.416 billion rubles), and other dues (0.300 billion rubles).

Trade union dues of 1.376 billion rubles are derived on the basis of (1) estimated trade union membership in 1970 of 94 million; (2) an estimated annual average wage of trade union members of 1,464 rubles—assumed to be the same as that for workers and employees in the state sector (*Narkhoz 1972*, p. 516); and (3) the assumption that dues average 1% of members' annual average earnings. The estimate of membership is based on (1) reported membership of more than 86 million on 1 January 1968 and more than 96 million at the end of 1971 (*Sovetskoye profsoyuzy*, no. 5, 1972, p. 6) and (2) an index of state employees, calculated from Murray Feshbach and Stephen Rapawy, "Labor Constraints in the Five-Year Plan," *Soviet Economic Prospects for the Seventies*, Joint Economic Committee, US Congress, Washington, 1973, p. 508–509. The dues rate is that set for earnings of 70 rubles per month and higher (*Spravochnik profsoyuznogo rabotnika*, 1972, p. 463). Though students and some other groups pay a lower rate, this source of overestimation is offset by an underestimation resulting from the failure to include initiation fees that new members must pay.

Communist Party dues of 0.416 billion rubles are derived on the basis of (1) estimated total membership in the Party in 1970 of 14,192,174—the average of membership figures for 1 January 1970 and 1 January 1971 given in *Partiynaya zhizn'*, no. 14, 1973, p. 9–10; (2) an estimated annual average wage of Party members of 1,466.4 rubles—assumed to be the same as annual average earnings of employees in state and economic administrative organizations, cooperatives, and social organizations (*Narkhoz 1972*, p. 517); and (3) reports that

ducs amount to 2% of members' annual average carnings.

Other dues—Komsomol, the Voluntary Society for Assisting the Army, Air Force, and Navy (DOSAAF), and many others—cannot be estimated directly and are arbitrarily approximated at 0.300 billion rubles.

b. *Housing*

(1) Total *cash rents* paid for urban public housing are estimated at 1.091 billion rubles, the sum of cash rent on urban public housing (1.016 billion rubles) and additional charges paid by members of housing cooperatives for maintenance (0.075 billion rubles). Cash rent on urban public housing is estimated as the product of the total midyear stock of urban public housing (0.696 billion square meters of living space) and the average rental rate per square meter of living space (1.46 rubles per year—I. N. Shutov, *Lichnoye potrebleniye pri sotsialisme*, Moscow, 1972, p. 170). The midyear stock of urban public housing is derived on the basis of (1) end-year stocks in 1969 and 1970 measured in square meters of "useful space"* (*Narkhoz 1970*, p. 546) and (2) the coefficient of two-thirds for converting "useful space" to "living space" (Willard S. Smith, "Housing in the Soviet Union—Big Plans, Little Action," *Soviet Economic Prospects for the Seventies*, Joint Economic Committee, US Congress, Washington, 1973, p. 406). Additional charges paid by members of housing cooperatives for maintenance are estimated as the product of the midyear stock of cooperative housing (0.029 billion square meters of living space) and the charge per square meter of living space (2.59 rubles—calculated from Smith, *op. cit.*, p. 412, 423).

(2) *Imputed net rent* on urban private and rural housing is estimated at 1.080 billion rubles, the difference between gross rent (1.642 billion rubles) and purchased repair by occupants of urban private and rural housing (0.562 billion rubles—2, b, (3), below). Imputed gross rent on urban private and rural housing is estimated as the product of the midyear stock of urban private and rural housing (1.125 billion square meters of living space) and the average rental rate for state housing (1.46 rubles per square meter of living space—Shutov, *op. cit.*). The midyear stock of urban private and rural housing is derived on the basis of (1) end-year stocks in 1969 and 1970 measured in square meters of useful space (urban from *Narkhoz 1970*, p. 546; rural from Smith, *op. cit.*, p. 420) and (2) the coefficient for converting useful space to living space of two-thirds for urban stock and three-fourths for rural stock (*Ibid.*, p. 406).

(3) Expenditures by the population on *repair* are estimated at 1.258 billion rubles, the sum of outlays by tenants in urban public housing (0.696 billion rubles) and outlays by occupants of urban private and rural housing (0.562 billion rubles). Each estimate is derived as the product of the appropriate midyear stock of living space (urban public stock from 2, b, (1), above; urban private and rural from 2, b, (2), above) and an annual repair expenditure by tenants of state housing of 1 ruble per square meter of living space (estimated by B. Kolotilkin in *Voprosy ekonomiki*, no. 9, 1972, p. 45) and an assumed annual repair outlay by occupants of urban private and rural housing of one-half that, or 0.5 ruble per square meter of living space. Of the total outlays on repair of 1.258 billion rubles, 0.195 billion rubles are estimated to have been spent on state-provided services—that is, roughly half of outlays on "construction and repair of housing" as reported in *Narkhoz 1972*, p. 621—and the balance, 1.063 billion rubles, on repair services provided by private persons. Of the latter, 90%, or 0.957 billion rubles, is arbitrarily assumed to be wages or private incomes from housing repair services.

c. *Other services*

(1) *Utilities* expenditures of households of 3.478 billion rubles are the sum of kerosene purchases of 0.131 billion rubles (1, a, above) and outlays of 3.347 billion rubles. The outlays represent the difference between total household outlays in 1970 on "housing-communal" services (4.6 billion rubles—V. Ye. Komarov and U. G. Chernyavskiy, *Dokhody i potrebleniye naseleniya SSSR*, Moscow, 1973, p. 209) and the sum of household payments for (1) cash rent (1.091 billion rubles—2, b, (1), above) and (2) outlays for hotels and the like (0.162 billion rubles). The latter deduction is required because Komarov and Chernyavskiy use the expenditure classification system employed by Gosplan in calculating the annual "balance of incomes and expenditures of the population." The Gosplan category "communal services" includes both utility payments and the population's outlays

*The term *useful space*, as used in Soviet statistics, includes living rooms, bedrooms, kitchens, baths, interior halls, and closets but excludes external halls, stairways, and elevator shafts and the space occupied by walls. *Living space* refers to living rooms and bedrooms.

on hotels, dormitories, and similar facilities. (See *Metodicheskiye ukazaniya*, 1969, p. 535.) In the absence of reported data, outlays on hotels are arbitrarily estimated on the assumption that outlays for wages and social insurance represent two-thirds of total current outlays. The wage bill is estimated at 0.103 billion rubles, the product of employment in hotels (91,000) and the annual average wage reported for "housing-communal economy" (1,134 rubles). The employment figure is obtained by projecting to 1970 an estimate given for 1969 (by Stephen Rapawy, *Comparison of US and USSR Civilian Employment in Government: 1950–1969*, US Department of Commerce, Bureau of Economic Analysis, International Population Reports Series P-95, no. 69, April 1972, p. 17). The average wage is from *Narkhoz 1972*, p. 517. Social insurance deductions are estimated at 0.005 billion rubles, 4.7% of the wage bill—the rate for the communal economy (*Spravochnik partiynogo rabotnika, vypusk vos'moy*, Moscow, 1968, p. 440, hereafter referred to as *Spravochnik partiynogo rabotnika*).

(2) *Transportation* outlays are given in Komarov and Chernyavskiy, *op. cit.*, p. 209.

(3) *Communications* outlays are given in Komarov and Chernyavskiy (*Ibid.*).

(4) *Repair and personal care* expenditures of households, excluding their outlays for housing repair, are estimated at 4.674 billion rubles, the sum of state-provided "everyday" services (3.650 billion rubles), privately provided services (0.937 billion rubles), and "other services" (0.087 billion rubles). Data for state-provided "everyday" services, excluding housing construction and repair, are from *Narkhoz 1972*, p. 621. Privately provided services, excluding housing, are derived as the difference between an estimate of total private services of about 2.0 billion rubles (V. Azar and I. Pletnikova, *Ekonomicheskiye nauki*, no. 11, 1973, p. 45) and household purchases of privately provided repair of housing of 1.063 billion rubles (2, b, (3), above). Wages or private income from these privately provided services, excluding housing, are arbitrarily assumed to amount to 90%, or 0.843 billion rubles. Outlays for "other services" are defined in the "balance of incomes and expenditures of the population" to include payments for processing agricultural products, transport fees charged by collective farms, fees for *khozraschet* training courses, and legal and consultation fees. These outlays are derived as the difference between households' expenditures for "other services" of 1.7 billion rubles—believed to include certain education and health outlays (Komarov and Chernyavskiy, *op. cit.*, p. 209)—and that part of these outlays counted elsewhere in the accounts. The outlays counted elsewhere include production services purchased from collective farms (0.100 billion rubles—see Appendix A, item 2, b) and fees paid by the population for certain education and health and physical culture services (0.971 billion rubles and 0.542 billion rubles, respectively—see 2, c, (6) and 2, c, (7), below).

(5) *Recreation and culture* expenditures of households are estimated at 2.647 billion rubles, the sum of (1) outlays for entertainment (1.500 billion rubles—*Ibid.*, p. 209), (2) expenditures on "unorganized leisure" (0.700 billion rubles—Azar and Pletnikova, *op. cit.*, p. 44), and (3) outlays for passes to resorts and the like (0.447 billion rubles). Outlays for "unorganized leisure" consist of expenditures on hotels, motels, and the like (0.162 billion rubles—2, c, (1), above) and payments to private persons for room rentals (0.538 billion rubles—of which 90%, or 0.484 billion rubles, is arbitrarily assumed to be wages or private income from such services). Outlays for passes to resorts and the like are derived as the difference between total estimated outlays of the population on public health and physical culture (0.542 billion rubles—2, c, (7), below) and an estimate of fees paid by parents for children's nursery care (0.095 billion rubles). These fees are calculated as the product of the number of children in nurseries (1,181,500—*Narkhoz 1972*, p. 693) and the annual charge per child (80 rubles—*Sotsialisticheskiy trud*, no. 6, 1971, p. 9).

(6) *Education* outlays of households are estimated at 1.064 billion rubles, the sum of outlays for private services (0.093 billion rubles) and fees for public education (0.971 billion rubles). In the absence of data on the substantial private activity that is known to exist in both education and health, outlays for private services are arbitrarily estimated at 1% of the state wage bill for education. (For the education wage bill, see Appendix D, item 1, a.) Fees paid by the population for public education are estimated from Rutgayzer's data, which show that 5% of "total education expenditures" were paid by the population in 1970 (Rutgayzer, *op. cit.*, p. 114). "Total education expenditures" used by Rutgayzer are calculated at 19.422 billion rubles, 27.1% (*Ibid.*, p. 112) of his "total services (exclud-

ing science and administration)"—estimated at 71.667 billion rubles in 1, a, above.

(7) *Health* outlays of households are estimated at 0.148 billion rubles, the sum of outlays for private services (0.053 billion rubles) and fees for public health (0.095 billion rubles). Outlays for private services are arbitrarily estimated at 1% of the state wage bill for health. (For the wage bill, see Appendix D, item 1, c.) That part of fees paid by the population for public health services recorded here is the difference between (1) total fees paid by the population for public health and physical culture (0.542 billion rubles) and (2) fees paid for resort passes and the like (0.447 billion rubles), which are recorded in recreation and culture (2, c, (5), above). Total fees paid by the population for public health and physical culture are derived from Rutgayzer's data, which show that 6% of "total health and physical culture" expenditures were paid by the population in 1970 (*Ibid.*, p. 114). "Total health and physical culture expenditures" used by Rutgayzer are calculated at 9.030 billion rubles, 12.6% (*Ibid.*, p. 112) of his "total services (excluding science and administration)"—estimated at 71.667 billion rubles in 1, a, above.

3. Consumption-in-kind

a. *Farm consumption-in-kind*

Appendix A, item 2, c, (1).

b. *Military subsistence*

Appendix A, item 3, b.

4. Total outlays for consumption

Derived as the sum of items 1, 2, and 3.

5. Investment

a. *Private housing construction*

The value of private housing construction is estimated at 2.029 billion rubles by adjusting official handbook data on the value of private housing construction (1.636 billion rubles—*Narkhoz 1972*, p. 486) upward by 24% in order to express the official series in 1969 estimate prices (Smith, *op. cit.*, p. 418).

b. *Farm investment-in-kind*

Appendix A, item 2, c, (2).

6. Total outlays for consumption and investment

Derived as the sum of items 4 and 5.

7. Transfer outlays

a. *Net savings*

Net savings by households of 9.720 billion rubles are the sum of (1) net additions to savings deposits between end-1969 and end-1970 (8.203 billion rubles—*Narkhoz 1970*, p. 562), (2) net bond purchases (0.470 billion rubles—Ministerstvo finansov SSSR, Byudzhetnoye upravleniye, *Gosudarstvennyy byudzhet SSSR i byudzhety soyuznykh respublik 1966–1970, statisticheskiy sbornik*, Moscow, 1972, p. 12, hereafter referred to as *Gosudarstvennyy byudzhet 1966–1970*), and (3) net insurance premiums (1.047 billion rubles). The latter estimate is derived as the difference between premiums paid by the population (1.827 billion rubles—*Finansy SSSR*, no. 4, 1972, p. 3) and indemnities received (0.780 billion rubles—*Finansy SSSR*, no. 1, 1971, p. 10).

b. *Direct taxes*

Gosudarstvennyy byudzhet 1966–1970, p. 12.

c. *Other payments to the state*

Other payments to the state are estimated at 0.587 billion rubles, the sum of net state revenues from lotteries (0.254 billion rubles—*Ibid.*) and other state budget revenue from the population (0.333 billion rubles). Other state budget revenue from the population is derived as the difference between total state budget revenues from the population (13.844 billion rubles—*Ibid.*), and the sum of (1) collective farm market fees paid by households (0.050 billion rubles—Appendix A, item 2, b); (2) net bond purchases (0.470 billion rubles—7, a, above); (3) direct taxes from the population (12.737 billion rubles—7, b, above); and (4) net lottery ticket purchases (0.254 billion rubles—above).

8. Total outlays

Derived as the sum of items 6 and 7.

C

APPENDIX C

Sources for Table 3. USSR: Public Sector Incomes, 1970

1. Net income retained by organizations

a. *Retained income of collective farms*

Retained income of collective farms is estimated at 7.186 billion rubles, the difference between total net income of collective farms in 1970 of 8.097 billion rubles (*Ekonomika sel'skogo khozyaystva*, no. 7, 1972, p. 34) and the sum of (1) income taxes (0.666 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 12); (2) premia paid to collective farm members from profits (0.225 billion rubles—Appendix A, item 2, a, (1)); and (3) other taxes (0.020 billion rubles). Other taxes are estimated at the level of these payments in 1969 as derived from data regarding collective farms' total tax payments made from net income (N. F. Panchenko, *et al., Industrial'noye razvitiye i effektivnost' kolkhoznogo proizvodstva*, Moscow, 1971, p. 30; G. G. Badir'yan, *Ekonomika sotsialisticheskogo sel'skogo khozyaystva*, Moscow, 1971, p. 463) and their payment of income taxes alone (*Gosudarstvennyy byudzhet 1966–1970*, p. 12).

b. *Retained profits of state enterprises*

Retained profits of state enterprises are estimated at 26.481 billion rubles, the difference between net profits (85.668 billion rubles—*Narkhoz 1972*, p. 697) and the sum of deductions to the budget (54.157 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 11) and bonuses paid from profits (5.030 billion rubles). Official handbook data for profits include profits allocated to various incentive funds from which bonuses are paid to employees. Since these bonuses are included in the state wage bill, they are here deducted in order to avoid doublecounting. Their estimate is derived as the sum of bonuses paid from "material incentive funds" that were formed under the rules of the 1965 economic reform and bonuses paid from two additional profits-financed incentive funds—the "fund for premia for victory in socialist competition" and the "fund for producing consumer goods from waste materials."

Bonuses paid from material incentive funds are estimated at 4.730 billion rubles, 43% of enterprises' total incentive funds of 11.000 billion rubles (*Narkhoz 1972*, p. 721). The share is that calculated for industrial enterprises based on their 1970 expenditures from the material incentive fund (3.739 billion rubles) and their total incentive funds (8.700 billion rubles—*Ibid.*, p. 722).

Bonuses paid from the other incentive funds financed from profits are estimated at 0.300 billion rubles on the basis of total expenditures from each fund—0.334 billion rubles from the first, the "fund for premia for victory in socialist competition"; 0.275 billion rubles from the second, the "fund for producing consumer goods from waste materials" (*Ibid.*, p. 721)—and the assumption that expenditures for bonuses constituted 65% of total outlays of the first and 30% of total outlays of the second. These shares are in line with those established for 1967 when: (1) premia paid from the first fund accounted for 0.175 billion rubles, or 65.3% of the total fund of 0.268 billion rubles (*Narkhoz 1967*, p. 880) and (2) estimated premia paid from the second fund, 0.047 billion rubles (approximated by analogy with the first fund, at two-thirds of the joint entry for "premia and social-cultural measures"), represented 27.8% of the total fund (0.169 billion rubles—*Ibid.*).

c. *Retained profits of consumer cooperatives*

Retained profits of consumer cooperatives are estimated at 0.794 billion rubles, the difference between net profits (1.321 billion rubles—*Narkhoz 1972*, p. 697) and the sum of (1) profits distributed to cooperative members (0.027 billion rubles—Appendix A, item 1, b); (2) income taxes (0.462 billion rubles); and (3) premia paid to employees (0.038 billion rubles). Income taxes are calculated at 35% of cooperatives' profits, the rate given in V. V. Lavrov, *et al., Finansy i kredit SSSR*, Moscow, 1972, p. 179. Premia paid to employees are arbitrarily estimated at one-half of incentive

funds of cooperatives of 0.075 billion rubles (*Narkhoz 1972*, p. 720).

d. *Retained profits of other organizations*

Retained profits of other organizations (mainly "social organizations," such as trade unions) are estimated at 0.321 billion rubles, the difference between net profits (0.428 billion rubles) and income taxes (0.107 billion rubles). Net profits of other organizations are estimated as four times the income taxes paid by these organizations, given a tax rate of 25% (*Lavrov, op. cit.*). Income taxes paid by other organizations are calculated as the difference between total income taxes paid by cooperatives and other enterprises (0.569 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 12) and income taxes paid by consumer cooperatives (0.462 billion rubles—1, c, above).

2. Charges to economic enterprises for special funds

a. *Social insurance and social security*

Total charges to economic enterprises for social insurance and social security are derived as 9.436 billion rubles, the sum of (1) state budget receipts from social insurance charges (8.300 billion rubles—*Narkhoz 1972*, p. 724), (2) collective farm payments into the All-Union Social Insurance Fund for Collective Farmers (0.356 billion rubles), and (3) collective farm payments into the All-Union Social Security Fund for Collective Farmers (0.780 billion rubles).

Collective farm payments into the All-Union Social Insurance Fund for Collective Farmers are derived as 0.356 billion rubles, 2.4% of the estimated total labor pay fund—14.840 billion rubles, including money pay (14.040 billion rubles) and in-kind payments valued in procurement prices (0.800 billion rubles). (See K. S. Kartashova, *Finansy, kredit i raschety v kolkhozakh*, Moscow, 1970, p. 75.) Official data put the labor pay fund at 15.0 billion rubles, including money pay (14.040 billion rubles) and in-kind payments valued in *state retail* prices (0.960 billion rubles—Appendix A, item 2, a, (1)). The in-kind payments were adjusted to a *procurement* price basis by using the relationship between RSFSR state retail and procurement prices for grain. (See G. Ya. Kuznetsov, *Tovarnyye otnosheniye i ekonomicheskiye stimuly v kolkhoznom proizvodstve*, Moscow, 1971, p. 263.)

Collective farm payments into the All-Union Social Security Fund for Collective Farmers are estimated at 0.780 billion rubles, 4% of collective farms' gross income of the preceding year (Kartashova, *op. cit.*, p. 69; *Narkhoz 1970*, p. 383).

b. *Education; research*

Charges to enterprise costs to finance education (worker training) and research are derived as 2.978 billion rubles, the sum of estimated charges to cost for (1) education (0.400 billion rubles) and (2) research (2.578 billion rubles). The education allowance is in line with Becker's estimate of 0.250 billion rubles in 1960 and 0.300 billion rubles in 1964. (See Becker, *Soviet National Income, 1958–1964, National Accounts of the USSR in the Seven Year Plan Period, op. cit.*, p. 366.) Charges to enterprise costs to finance research are arbitrarily estimated at half the difference between total outlays on science from the state budget and other sources (11.7 billion rubles—*Narkhoz 1972*, p. 726) and the state budget allocation to "science" (6.543 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 25).

3. Taxes and other payments to the budget

a. *Tax on income of collective farms*

See 1, a, above.

b. *Tax on income of consumer cooperatives and other organizations*

The entry of 0.569 billion rubles is the sum of income taxes of consumer cooperatives (0.462 billion rubles—1, c, above) and income taxes of other organizations (0.107 billion rubles—1, d, above).

c. *Deductions from profits of state enterprises*

Deductions to the budget from profits of state enterprises are estimated at 53.110 billion rubles, the difference between total deductions to the budget from profits of state enterprises (54.157 billion rubles—1, b, above) and households' insurance premiums net of indemnities (1.047 billion rubles—Appendix B, item 7, a). A major portion of net receipts of Gosstrakh, the state insurance organization, is paid into the state budget as profits. (See Becker, *op. cit.*, p. 367.) Since net insurance premiums are included in transfer receipts (8, below), they are here deducted in order to avoid doublecounting.

d. *Turnover tax*

Gosudarstvennyy byudzhet 1966–1970, p. 11.

e. *Miscellaneous charges*

Miscellaneous charges are derived as 22.792 billion rubles, the sum of forest incomc (0.492 billion rubles—*Ibid.*, p. 12), rental income from property of local soviets (0.063 billion rubles—*Ibid.*, p. 78), price markups on radio and television sets paid to the budget to finance broadcasting (0.510 billion rublcs—Azar and Pletnikova, *op. cit.*, p. 44), local taxes and fees paid by enterprises (0.459 billion rubles), and other state budget revenues (21.268 billion rubles).

Local taxes and fees paid by enterprises are derived as the difference between total local taxes and fees (0.842 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 101) and local taxes and fees paid by the population (0.383 billion rubles). The population's share is derived as the difference between total state budget revenues from the population and the total of the identified revenues from the population (*Ibid.*, p. 12).

Other revenues are estimated, following the procedure used by Becker (*op. cit.*, p. 367–368), as 75% of rcsidual state budget revenues "from the socialist economy." Residual budget revenues from the socialist economy are derived as 28.358 billion rubles, the difference between total state budget revenues from the socialist economy (142.859 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 11) and the sum of (1) the identified sources of these revenues (113.467 billion rubles—*Ibid.*, p. 11–12), (2) rental income from property of local soviets (0.063 billion rubles—above), (3) price markups on radio and television sets paid to the budget to finance broadcasting (0.510 billion rubles—above), and (4) local taxes and fees from enterprises (0.459 billion rubles—above).

The total composition of residual budget revenues "from the socialist economy" is not known. The following listing is compiled mainly from Becker, *op. cit.*, p. 367–368, and Daniel Gallik, Cestmir Jesina, and Stephen Rapawy, *The Soviet Financial System—Structure, Operation, and Statistics*, US Department of Commerce, Bureau of the Census, International Population Reports Series P-90, no. 23, June 1968, p. 131–133, 163:

(1) Special purpose funds—(a) redistributions of local industry profits, (b) deductions from compulsory property insurance payments to finance property protection measures, (c) a highway construction and maintenance fund for republic and oblast highways, (d) housing capital repair funds originating in the rent charged for the use of nonresidential quarters in apartment houses (stores, storage areas, or shops), and (e) deductions from prices of petroleum and natural gas to cover charges for geological prospecting work;

(2) Receipts of budgetary institutions;

(3) Customs duties paid by import organizations and by private citizens receiving goods directly from abroad;

(4) Accounting profits of foreign trade organizations (we assume that accounting profits encompass the losses sustained from exports and the profits earned on imports as a result of the difference between domestic and foreign trade prices);

(5) Income from the sale of state property such as property confiscated by the courts and unclaimed shipments;

(6) Fees charged by the state for automobile inspections; registration of trademarks; inspection of weights, standards, and measures; fishing licenses; and notary and judicial services; and

(7) Amounts recovered from pilferage and from illegal price changes, overdue obligations paid, fines, and other irregular payments to the budget.

The category may also include the value of sales from state reserves, repayments of foreign aid extended by the USSR, and unexpended budget funds carried over from previous years.

In the listing above only items (5), income from the sale of state property, and (7), amounts recovered—together with the value of sales from that portion of state reserves produced in former years and sold in the current year, repayment of foreign aid extended in prior years, and unexpended budget funds carried over from previous years—clearly represent income not currently earned. Item 4 (accounting profits of foreign trade organizations) should be excluded if GNP is to be a measure of value added in domestic productive activity. (See Franklyn D. Holzman, *Foreign Trade Under Central Planning*, Harvard University Press, Cambridge, 1974, p. 337–338.) On the other hand, if the goal is to measure expenditure on domestically produced output in established prices, the losses arising from buying export goods at domestic prices and selling them abroad at lower prices should be subtracted from value added by sector of origin (*Ibid.*). Since it is not possible to estimate the share of the items that we want to include in the residual budget revenues, three-fourths of thc residual is arbitrarily assigned to current charges.

4. Allowance for subsidized losses, n.e.c.

The allowance for subsidized losses, n.e.c., of 19.454 billion rubles is the sum of state budget subsidies to industry (14.33 billion rubles), agriculture (1.342 billion rubles), trade (0.400 billion rubles), services (3.262 billion rubles), and other branches of material production (0.120 billion rubles). The assumption is made that the official statistical handbook series on net profits (as in item 1, b, above) accounts for operating losses of *khozraschet* enterprises and organizations, as well as state housing. (See *Narkhoz 1972*, p. 794.)

Subsidies to industry consist of subsidies on government purchases of agricultural products. These subsidies, which are estimated in Table C-1 at 14.33 billion rubles, arise when agricultural products purchased by government procurement organizations from farm producers at various prices are resold to the processing sector and trade organizations at accounting prices that fall below the procurement prices. The difference between the government purchase price and the accounting price at which the processing industry enters the product in its production costs is financed from the budget and is considered a subsidy to industry. (See *Finansy SSSR*, no. 5, 1974, p. 45.) While allocation of the whole of these subsidies to industry results in some overstatement of industrial subsidies, since some part of the subsidized agricultural products passes directly into the trade net without industrial processing, the extent of the overstatement is considered small.

Subsidies to agriculture covering the difference between wholesale prices and lower prices charged farm producers for certain industrial products are estimated at 1.342 billion rubles, the sum of (1) subsidies on purchases of mineral fertilizer, tractors, trucks, agricultural machinery, and land construction machinery, estimated at 0.868 billion rubles—midway between the 1969 Plan for these subsidies of 0.737 billion rubles (*Finansy SSSR*, no. 1, 1969, p. 12) and the 1971 Plan of 1 billion rubles (*Finansy SSSR*, no. 10, 1970, p. 6)—and (2) subsidies on purchases of processed feeds, estimated at 0.474 billion rubles. The latter estimate is based on the level of subsidy per ton of processed feed of 20 rubles (V. N. Semenov, *Rol' finansov i kredita v razvitii sel'skogo khozyaystva*, Moscow, 1973, p. 261) and the assumption that agriculture purchased the whole of 1970 industrial output of processed feeds of 23.7 million tons (*Narkhoz 1972*, p. 174–175).

Subsidies for trade are estimated budget allocations to cover losses incurred by retail trade enterprises when they are permitted to sell slow-moving goods at reduced prices. The estimate for 1970 of 0.400 billion rubles is set somewhat below the annual average level that can be established for these allocations given their 1971–73 total of 1.3 billion rubles (*Finansy SSSR*, no. 1, 1974, p. 7).

Subsidies to services of 3.262 billion rubles are the sum of subsidies for housing maintenance (2.086 billion rubles) and art, recreation, and physical culture (1.176 billion rubles). Subsidies for housing maintenance of 2.086 billion rubles are derived as the product of the midyear stock of state housing, 1.043 billion square meters of useful space (calculated from end-year data in *Narkhoz 1970*, p. 546), and an estimated state subsidy of 2 rubles per square meter. The subsidy rate is based on the statement that the state spends 3 rubles per square meter for maintenance of state housing, one-third of which is covered by rent (*Voprosy ekonomiki*, no. 2, 1973, p. 41). The rate is taken to refer to useful rather than living space.

Subsidies for art, recreation, and physical culture of 1.176 billion rubles are the sum of state budget allocations to art and radio broadcasting (0.628 billion rubles—*Narkhoz 1972*, p. 727) and estimated subsidies for recreation and physical culture (0.548 billion rubles). Subsidies for recreation and physical culture are derived as the sum of state budget outlays for physical culture (0.047 billion rubles—*Ibid.*) and estimated subsidies for recreation (0.501 billion rubles), representing support from social insurance funds for resort passes and institutions providing resort services. This support is the sum of (1) direct outlays from social insurance funds for resort passes (0.343 billion rubles—derived as 43.4% of the full cost of passes to resorts of 0.790 billion rubles) and (2) subsidies from social insurance funds to institutions providing resort services (0.158 billion rubles--derived as 20% of the full cost of passes of 0.790 billion rubles). The shares are from Azar and Pletnikova, *op. cit.*, p. 44. The full cost of passes is derived on the basis of the population's outlays for passes to resorts and the like (0.447 billion rubles—Appendix B, item 2, c, (5)) and their share in the full cost (56.6%—100% less the share covered by social insurance funds, 43.4%, above).

Subsidies to other branches of material production are the reported state budget allocations to the press (0.120 billion rubles—*Narkhoz 1972*, p. 727).

5. Consolidated total charges against current product, net of depreciation

Derived as the sum of items 1 through 4.

6. Depreciation

Depreciation of 31.827 billion rubles is the sum of amortization deductions in state-cooperative organizations (29.105 billion rubles—*Ibid.*, p. 723) and amortization deductions in collective farms (2.722 billion rubles—Z. I. Kravchenko, *Proizvodstvennyye fondy v kolkhozakh i sovkhozakh*, Moscow, 1972, p. 64).

7. Consolidated total charges against current product

Derived as the sum of items 5 and 6.

8. Transfer receipts

Appendix B, item 7.

9. Consolidated net income

Derived as the sum of items 7 and 8.

Table C-1

USSR: Subsidies on Government Purchases of Agricultural Products,[1] 1969–71
Billion Rubles

	1969	1970	1971
Total[2]	**7.88**	**14.33**	**15.57**
Meat	5.30[3]	8.74[4]	9.83
Milk	1.38[5]	3.12[6]	3.22
Wool	Negl.	0.14[7]	0.15
Eggs	Not app.	0.03[7]	0.04
Grain	0.56[8]	0.71	0.64
Potatoes	0.08	0.09	0.09[9]
Vegetables	0.11	0.13[9]	0.21[9]
Sugar beets	0.10[10]	0.11	0.10
Sunflower seeds and other oil seeds; Hemp, flax, kenaf, hides	0.10[10]	0.11	0.10
Cotton	0.25[10]	1.15[11]	1.19

[1] Estimates of the subsidies involved in government purchases of agricultural products from socialized and private agriculture at one set of prices and their resale to industry and trade organizations at lower prices were derived for each product on the basis of (1) the level of the product's subsidy in a base year, (2) the assumption that the subsidy would grow as did procurements of the product, and (3) additional adjustments to the subsidy level based on revisions in procurement prices or in wholesale prices.

The base year for subsidies is 1969 for grain, sugar beets, and oil seeds; it is 1970 for meat, milk, wool, eggs, and cotton—reflecting the July 1970 Plenum increases in procurement prices for livestock products; and it is 1971 for potatoes and vegetables. An index of procurements was calculated for each product from data in official statistical yearbooks. An index of sunflower seeds procurements was used to move the combined entry for all oil seeds and hemp, flax, and the like. Indexes computed from aggregate procurement data are considered acceptable since, for each product, both shares of procurement from the various producers and the relationships among the prices paid each producer have remained stable since the year chosen as the base for the product's index of procurements.

[2] Derived as the sum of the parts.

[3] *Finansy SSSR*, no. 3, 1969, p. 16. A total of 5.3 billion rubles, given in the source, implies a subsidy of 452 rubles for each of 11,724,000 tons, live weight, procured in 1969 (*Sel'skoye khozyaystvo*, 1971, p. 75).

[4] Derived as the product of the number of tons procured in 1970 (12,595,000 tons, live weight—*Narkhoz 1972*, p. 379) and the implied level of subsidy per procured ton, live weight (694 rubles). The latter is derived by dividing the 1971 Plan meat procurements subsidy (9.3 billion rubles—*Finansy SSSR*, no. 5, 1971, p. 65) by the 1971 Plan for meat procurements (13.4 million tons, live weight—*Gosudarstvennyy pyatiletniy plan 1971–1975*, p. 349).

[5] Derived as the product of the number of tons procured in 1969 (43,782,000—*Sel'skoye khozyaystvo*, 1971, p. 79) and the level of subsidy per procured ton (31.49 rubles). The latter is the difference between the 1969 average procurement price of 161 rubles per ton realized by all producers and the accounting price of 129.51 rubles at which the processing industry entered the milk in its production costs. The average procurement price is based on quantities procured and 1969 prices paid each producer (Badir'yan, *op. cit.*, p. 36, 48); the accounting price is from I. G. Kudryavtseva, *Tsenoobrazovaniye v pishchevoy promyshlennosti*, Moscow, 1972, p. 29.

[6] Derived as the product of the number of tons procured in 1970 (45,681,000—*Narkhoz 1972*, p. 380) and the implied level of subsidy per procured ton (68.32 rubles). The latter is derived by dividing the 1971 Plan milk procurements subsidy (3.3 billion rubles—*Finansy SSSR*, no. 4, 1971, p. 65) by the 1971 Plan for milk procurements (48.3 million tons—*Gosudarstvennyy pyatiletniy plan 1971–1975*, p. 349).

[7] Estimated on the basis of (1) the total 1970 addition to existing subsidies on procurements of livestock products resulting from the procurement price increases of 1970 (4.9 billion rubles—Semenov, *op. cit.*, p. 243), (2) that part of the addition attributable to meat and milk (4.73 billion rubles—derived below), and (3) the arbitrary allocation of the remainder (0.17 billion rubles) between wool and eggs by shares of four-fifths and one-fifth, respectively.

The addition to the existing subsidy is calculated for meat and milk as $Q_{70}(S_{70}-S_{69})$,

where: Q = quantity procured in tons
S = subsidy in rubles per procured ton.

For meat: Q_{70} = 12,595,000 (note 4, above)
S_{70} = 694 (note 4, above)
S_{69} = 452 (note 3, above)

For milk: Q_{70} = 45,681,000 (note 6, above)
S_{70} = 68.32 (note 6, above)
S_{69} = 31.49 (note 5, above)

Thus: $Q_{70}(S_{70}-S_{69})$
for meat = 3.05
for milk = 1.68
Total = 4.73 billion rubles

[8] Estimated as the product of the number of tons procured in 1969 (55,540,000—*Sel'skoye khozyaystvo*, 1971, p. 55) and an allowance of 10 rubles per ton to cover budget-financed payments for above-plan procurements. This is the 1966-70 annual average level of these payments as calculated per ton of procured grain (base plus above-plan procurements—A. Ye. Kaminsky, *et al.*, editors, *Ekonomika zernovogo khozyaystva*, Moscow, 1970, p. 190; *Vestnik statistiki*, no. 6, 1973, p. 17).

[9] *Ekonomika sel'skogo khozyaystva*, no. 5, 1972, p. 103.

[10] Based on an arbitrary allocation among sugar beets, sunflower seeds, and cotton of the residual obtained by deducting the sum of all known entries with the exception of milk (6.05 billion rubles) from an announced plan for budget-financed procurement subsidies (6.5 billion rubles—*Finansy SSSR*, no. 1, 1969, p. 12). The plan number is believed to exclude subsidies for milk, reflecting a new arrangement whereby, effective January 1969, the Milk Industry was to cover the difference between the procurement price and its accounting price from an intra-Milk Industry special account to be funded by obligatory deductions in certain highly profitable areas of the industry (fluid milk, some cheeses, and ice cream). Poor performance because of "lack of financial discipline" has, however, required continuation of budget-financed subsidies for the product. (See A. K. Korovushkin, *et al.*, *Regulirovaniye raznits v tsenakh na sel'skokhozyaystvennuyu produktsiyu*, Moscow, 1972, p. 66–68; Kudryavtseva, *op. cit.*, p. 28–29, 32; *Finansy SSSR*, no. 5, 1971, p. 65; and *Ekonomika sel'skogo khozyaystva*, no. 8, 1974, p. 21.)

[11] Derived as the product of the number of tons procured in 1970 (6,890,000—*Narkhoz 1972*, p. 332) and the subsidy per procured ton (167 rubles—Semenov, *op. cit.*, p. 253).

D

APPENDIX D

Sources for Table 4. USSR: Public Sector Outlays, 1970

1. Communal services

a. *Education*

Total current outlays on education, estimated at 15.034 billion rubles, consist of wages (9.333 billion rubles), social insurance deductions (0.513 billion rubles), and materials purchases (5.188 billion rubles). The estimate of total current outlays on education is based on the assumption that the ratio of outlays for wages and social insurance deductions to total current outlays on education is the same as the ratio of outlays for wages and social insurance deductions to total current outlays on *education, culture, and art* as a whole. The ratio is established in the first tabulation, below.

Total current outlays on each of the categories—education, culture, and art—are presented in the second tabulation, below. The derivation follows that set out above for education; that is, total current outlays on each of the categories—education, culture, and art—are estimated on the assumption that the ratio of outlays for wages and social insurance deductions to total current outlays on the category is the same as the ratio of outlays for wages and social insurance deductions to total current outlays on *education, culture, and art* as a whole.

The derivation of the ratio is as follows:

	Billion Rubles	Percent[1]
Total outlays on education, culture, and art	23.500	
Less:		
Investment	3.235	
Capital repair	0.825	
Stipends	1.300	
Fees paid by the population	0.971	
Equals:		
Total current outlays	**17.169**	**100.00**
Wages	10.658	62.08
Social insurance deductions	0.586	3.41
Materials purchases	5.925[2]	34.51

[1] Total current outlays data of column 1 expressed in percent.
[2] Derived as the residual entry of column 1.

Total current outlays on each of the categories—education, culture, and art—are as follows:

	Billion Rubles		
	Education	**Culture**	**Art**
Total current outlays	**15.034**	**1.379**	**0.756**
Wages	9.333	0.856	0.469
Social insurance deductions.	0.513	0.047	0.026
Materials purchases[1]	5.188	0.476	0.261

[1] Derived as a residual, the difference between total current outlays and the sum of outlays for wages and social insurance deductions.

Data for total outlays on education, culture, and art (*prosveshcheniye*) from the state budget and other sources are from *Narkhoz 1972*, p. 726.

Investment is derived as the difference between total investment in 1970 in education, culture, art, and science (4.525 billion rubles—*Ibid.*, p. 479) and estimated investment in science only (1.290 billion rubles—4, below).

Capital repair outlays are estimated on the basis of (1) republic budget expenditures for capital repair in education, culture, and art (0.640 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 84) and (2) the assumption that these expenditures constituted 77.6% of total outlays for capital repair in these categories. The share is the ratio of state budget outlays on education, culture, and art (18.226 billion rubles—*Ibid.*, p. 25) to total outlays on the categories (23.5 billion rubles—above).

Stipends are from *Narkhoz 1972*, p. 535.

Fees paid by the population for kindergartens and other schooling are estimated in Appendix B, item 2, c, (6).

Total wages in education, culture, and art are derived as 10.658 billion rubles, the sum of (1) wages in education and culture (10.189 billion rubles)—calculated as the product of the number of workers (8,025,000—*Ibid.*, p. 505) and their annual average wage (1,269.6 rubles—*Ibid.*, p. 517)—and (2) wages in art (0.469 billion rubles). Wages in

art are derived as the product of the number of workers (412,000—*Ibid.*, p. 505) and their average annual wage (1,137.6 rubles—*Ibid.*, p. 517). In turn, wages in education are derived as 9.333 billion rubles, the difference between wages in education and culture (10.189 billion rubles—above) and wages in culture (0.856 billion rubles). The wage bill for culture is derived as the product of (1) the number of workers (674,000—estimated at 8.4% of total employment in education and culture on the basis of the share obtaining for 1966—TsSU, *Trud v SSSR, statisticheskii sbornik*, Moscow, 1968, p. 27, hereafter referred to as *Trud v SSSR*) and (2) the annual average wage (1,269.6 rubles). The wage is assumed to be the same as for education and culture as a whole (above).

Total social insurance deductions of 0.586 billion rubles are the sum of social insurance deductions in education (0.513 billion rubles), culture (0.047 billion rubles), and art (0.026 billion rubles). Deductions are calculated at 5.5% of the respective wage bills. (See *Spravochnik partiynogo rabotnika*, p. 440.)

b. *Art*

Total current outlays on art, estimated at 0.756 billion rubles, consist of wages (0.469 billion rubles), social insurance deductions (0.026 billion rubles), and materials purchases (0.261 billion rubles). For the derivation see 1, a, above.

c. *Health*

Total current outlays on health, estimated at 10.016 billion rubles, consist of wages (5.319 billion rubles), social insurance deductions (0.292 billion rubles), and materials purchases (4.405 billion rubles). The estimate of total current outlays on health is based on the assumption that the ratio of outlays for wages and social insurance deductions to total current outlays on health is the same as the ratio of outlays for wages and social insurance deductions to total current outlays on *health and physical culture* as a whole. The ratio is established in the first tabulation, below.

Total current outlays on each of the categories—health and physical culture—are presented in the second tabulation, below. The derivation follows that set out above for health; that is, total current outlays on each of the categories—health and physical culture—are estimated on the assumption that the ratio of outlays for wages and social insurance deductions to total current outlays on the category is the same as the ratio of outlays for wages and social insurance deductions to total current outlays on *health and physical culture* as a whole.

The derivation of the ratio is as follows:

	Billion Rubles	Percent[1]
Total outlays on health and physical culture	12.645	
Less:		
Investment	1.190	
Capital repair	0.352	
Fees paid by the population	0.542	
Equals:		
Total current outlays	**10.561**	**100.00**
Wages	5.608	53.10
Social insurance deductions	0.308	2.92
Materials purchases	4.645[2]	43.98

[1] Total current outlays data of column 1 expressed in percent.
[2] Derived as the residual entry of column 1.

Total current outlays on each of the categories—health and physical culture—are as follows:

	Billion Rubles	
	Health	Physical Culture
Total current outlays	**10.016**	**0.545**
Wages	5.319	0.289
Social insurance deductions	0.292	0.016
Materials purchases[1]	4.405	0.240

[1] Derived as a residual, the difference between total current outlays and the sum of outlays for wages and social insurance deductions.

Total outlays on health and physical culture are the sum of outlays from the state budget and other sources (11.8 billion rubles—*Narkhoz 1972*, p. 726) and outlays for activities which, while classified as "social security," are staffed by workers included in "health and physical culture" employment (0.845 billion rubles—*Ibid.*, p. 728).

Investment in health and physical culture is derived on the basis of the estimated level of investment in 1965 and the implied average annual rate of growth in 1966–75 (4.8%—see *Gosudarstvennyy pyatiletniy plan 1971–1975*, p. 225).

Capital repair outlays are estimated on the basis of (1) republic budget expenditures for capital repair in health and physical culture (0.2582 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 95) and (2) the assumption that these expenditures constituted 73.4% of total outlays for capital

repair in these categories. The share is the ratio of state budget outlays on health and physical culture (9.284 billion rubles—*Narkhoz 1972*, p. 727) to total outlays on health and physical culture (12.645 billion rubles—above).

Fees paid by the population are estimated in Appendix B, item 2, c, (7).

Total wages in health and physical culture are derived as 5.608 billion rubles, the product of the number of workers (5,080,000—*Ibid.*, p. 505) and the annual average wage (1,104 rubles—*Ibid.*, p. 517). Wages in health are derived as 5.319 billion rubles, the difference between total wages in health and physical culture (5.608 billion rubles—above) and wages in physical culture (0.289 billion rubles). The wage bill in physical culture is derived as the product of (1) the number of workers (262,000—estimated at 5.15% of total employment in "health and physical culture" on the basis of the share obtaining for 1966—*Trud v SSSR*, p. 27) and (2) the annual average wage (1,104 rubles). The wage is assumed to be the same as for health and physical culture as a whole (above).

Total social insurance deductions of 0.308 billion rubles are the sum of social insurance deductions in health (0.292 billion rubles) and in physical culture (0.016 billion rubles). Deductions are calculated at 5.5% of the respective wage bills. The rate is that reported for medical workers (*Spravochnik partiynogo rabotnika*, p. 440).

d. *Physical culture*

This category consists of state-run resorts and sports activities classified in "health." Total current outlays on physical culture, estimated at 0.545 billion rubles, consist of wages (0.289 billion rubles), social insurance deductions (0.016 billion rubles), and materials purchases (0.240 billion rubles). For the derivation, see 1, c, above.

2. General administrative and miscellaneous services

a. *General agricultural programs*

General agricultural programs include activities such as animal and plant disease control, veterinary services, seed inspection services, erosion control, and land improvement services. Total current outlays on general agricultural programs, estimated at 1.130 billion rubles, consist of wages (0.722 billion rubles), social insurance deductions (0.032 billion rubles), and materials purchases (0.376 billion rubles).

Wages are derived as the product of the number of workers (587,000) and their estimated annual average wage (1,229.6 rubles). Employment in general government agricultural programs is derived as the difference between total employment in state agriculture (9,180,000) and employment in state farms and other state agricultural enterprises (8,593,000), as reported in *Narkhoz 1972*, p. 504. The annual average wage is derived by weighting wage data for "state agriculture" and for "state farms and other state agricultural enterprises" (*Ibid.*, p. 516) by the employment data cited above.

Social insurance deductions are calculated at 4.4% of the wage bill. (See *Spravochnik partiynogo rabotnika*, p. 440.)

Total current outlays are estimated on the assumption that, as was approximately the case for education, culture, and art (1, a, above), wages and social insurance deductions (derived above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

b. *Forest economy*

Total current outlays on forest economy, estimated at 0.822 billion rubles, consist of wages (0.525 billion rubles), social insurance deductions (0.023 billion rubles), and materials purchases (0.274 billion rubles).

Wages are derived as the product of the number of workers (433,000—*Narkhoz 1972*, p. 504) and their estimated annual average wage (1,212 rubles). The wage is assumed to be the same as that for "state agriculture" (*Ibid.*, p. 516).

Social insurance deductions are calculated at 4.4% of the wage bill, the rate reported for state agriculture (*Spravochnik partiynogo rabotnika*, p. 440).

Total current outlays are estimated, as for general agricultural programs, on the assumption that wages and social insurance deductions (derived above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

c. *State administration (apparat)*

Apparat includes state administrative bodies at all levels, judicial organs, agencies for public security and defense, and administrative organs of consumer cooperatives. Total current outlays on state administration (*apparat*), estimated at 3.952 billion rubles, consist of wages (2.499 billion rubles),

social insurance deductions (0.137 billion rubles), and materials purchases (1.316 billion rubles).

Wages are derived as the difference between wages for workers in "*apparat* and administrative organs of social organizations" (2.761 billion rubles) and estimated wages for workers in administrative organs of "social organizations" only (0.262 billion rubles). (Social organizations include the Communist Party, the Komsomol, trade unions, DOSAAF, the Red Cross and Red Crescent societies, sports societies, and a number of others. The wages of the administrative organs of social organizations are recorded in 2, d, (4), below.) The wage bill for *apparat* and administrative organs of social organizations is derived as the product of employment (1,883,000—*Narkhoz 1972*, p. 505) and the annual average wage (1,466.4 rubles—*Ibid.*, p. 517). The wage bill for administrative organs of social organizations is derived as the product of (1) the number of workers (179,000—estimated at 9.5% of total *apparat* employment on the basis of the share obtaining for 1967—*Trud v SSSR*, p. 29) and (2) an annual average wage assumed equal to that for total *apparat* (1,466.4 rubles—above).

Social insurance deductions are calculated at 5.5% of the wage bill. (See *Spravochnik partiynogo rabotnika*, p. 440.)

Total current outlays are estimated, by analogy with education, culture, and art (1, a, above), on the assumption that wages and social insurance deductions (derived above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

d. *Municipal and related services*

(1) *Culture*—This category consists mainly of libraries, museums, parks, zoos, clubs, and children's camps. Total current outlays on culture, estimated at 1.379 billion rubles, consist of wages (0.856 billion rubles), social insurance deductions (0.047 billion rubles), and materials purchases (0.476 billion rubles). For the derivation see 1, a, above.

(2) *Municipal services*—This activity consists mainly of upkeep of city streets and municipal buildings, garbage and trash collections, fire protection, and the like. Total current outlays on municipal services, estimated at 0.712 billion rubles, consist of wages (0.454 billion rubles), social insurance deductions (0.021 billion rubles), and materials purchases (0.237 billion rubles).

Wages are derived as the product of the estimated number of workers (400,000) and their estimated annual average wage (1,134 rubles). On the basis of the statement that 12%–14% of the total number employed in the "housing-communal economy" were engaged in general city services and administration (L. N. Gol'tsman, *Ekonomika kommunal'nogo khozyaystva, uslug, tarify*, Moscow, 1966, p. 52), the number of workers in general city services is estimated at 13% of the total number of workers in housing-communal economy (3,052,000—*Narkhoz 1972*, p. 505). Their annual average wage is assumed to be the same as that for housing-communal economy as a whole (*Ibid.*, p. 517).

Social insurance deductions are calculated at the rate reported for the branch (4.7%—*Spravochnik partiynogo rabotnika*, p. 440).

Total current outlays are estimated, by analogy with education, culture, and art (1, a, above), on the assumption that wages and social insurance deductions (derived above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

(3) *Civilian police*—Total current outlays on civilian police, estimated at 1.562 billion rubles, consist of wages (0.988 billion rubles), social insurance deductions (0.054 billion rubles), and materials purchases (0.520 billion rubles).

Wages are derived as the product of estimated police employment (675,000) and an annual average wage assumed equal to that for all state employees (1,464 rubles—*Narkhoz 1972*, p. 516). Police employment is estimated at 67.6% of total reported employment in "other branches of material production" (998,000—*Ibid.*, p. 505). The share is that for 1969, estimated from Rapawy (*op. cit.*, p. 24) and *Narkhoz 1970*, p. 511.

Social insurance deductions are calculated at 5.5% of the wage bill, the rate reported for "state institutions" (*Spravochnik partiynogo rabotnika*, p. 440).

Total current outlays are estimated, by analogy with education, culture, and art (1, a, above), on the assumption that wages and social insurance deductions (derived above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

(4) *Administrative organs of social organizations*—This category consists of the administrative organs of social organizations such as the Com-

munist Party, the Komsomol, trade unions, DOSAAF, the Red Cross and Red Crescent societies, sports societies, and a number of others. Total current outlays on administrative organs of social organizations, estimated at 0.414 billion rubles, include wages (0.262 billion rubles), social insurance deductions (0.014 billion rubles), and materials purchases (0.138 billion rubles).

Wages are derived in item 2, c, above. Social insurance deductions are calculated at 5.5% of the wage bill, the rate for state institutions (*Spravochnik, partiynogo rabotnika*, p. 440). Total current outlays are estimated, by analogy with education, culture, and art (1, a, above), on the assumption that wages and social insurance deductions (above) constitute two-thirds of total current outlays. Materials purchases are the remainder.

3. Gross investment

a. *Fixed capital*

Investment in fixed capital is derived as 102.433 billion rubles, the sum of the following:

	Billion Rubles
Outlays by public sector (excluding collective farms)	90.300[1]
Capital repair	17.693
Changes in warehouse stocks of equipment requiring installation	−0.137
New fixed investment	72.744
Outlays by collective farms	8.591[1]
Capital repair	0.918
New fixed investment	7.673
Net addition to livestock inventories in socialized agriculture	3.542

[1] Derived as the sum of the parts.

Capital repair outlays of the public sector (excluding collective farms) are estimated on the assumption that the sum of amortization deductions for capital repair (14.663 billion rubles—*Narkhoz 1972*, p. 723) and republic budget expenditures for capital repair (2.499 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 81) accounts for 97% of total outlays for capital repair. (See *Voprosy ekonomiki*, no. 10, 1960, p. 48–49.)

(It should be noted that capital repair expenditures in the USSR cover a broader range of outlays than do capital repair expenditures reported in US accounts. Taxes on business income encourage US firms to charge to production costs many outlays classified as capital repair in the USSR.)

Warehouse stocks of uninstalled equipment declined by 0.137 billion rubles in 1970, dropping from a level of 5.017 billion rubles at the end of 1969 to 4.880 billion rubles at the end of 1970 (*Material'no-tekhnicheskoye snabzheniye*, no. 4, 1972, p. 68).

Public sector new fixed investment in 1970 is derived as the difference between total new fixed investment in the national economy (82.053 billion rubles—*Narkhoz 1972*, p. 473, 484) and the sum of new fixed investment outlays of the population (1.636 billion rubles—*Ibid.*, p. 486) and collective farms (7.673 billion rubles—*Ibid.*, p. 485). Official statistical handbook investment data are said to be in comparable estimate-cost prices of 1 January 1969.

Capital repair outlays of collective farms are from Kravchenko, *op. cit.*, p. 67.

The net addition to livestock inventories in socialized agriculture is estimated in Table D-1.

b. *Inventories*

Inventory investment of 15.154 billion rubles is the sum of the increment in public sector (excluding collective farms) inventories (14.910 billion rubles—derived in Table D-2) and the increment in collective farm inventories (0.244 billion rubles—derived in Table D-3).

4. Research and development (civilian and military)

Total current outlays on research and development, estimated at 9.927 billion rubles, consist of wages (5.316 billion rubles), social insurance deductions (0.292 billion rubles), and materials purchases (4.319 billion rubles). The derivation starts with the figure for total outlays on "science" (R&D) from the state budget and other sources (11.7 billion rubles—*Narkhoz 1972*, p. 726):

	Billion Rubles
Total outlays on "science" (R&D)	11.700
Less:	
Investment	1.290
Capital repair	0.483
Equals:	
Total current outlays	**9.927**
Wages	5.316
Social insurance deductions	0.292
Materials purchases	4.319

Investment in science is estimated at 28.5% of total investment in education, culture, art, and

science (4.525 billion rubles—*Ibid.*, p. 479). The share is derived as follows:

(1) Capital outlays on science in 1970 were reported as 1.560 billion rubles (UNESCO, *Statistical Yearbook*, 1972, p. 655). Capital outlays on education in 1970 were reported as 3.306 billion rubles (*Ibid.*, p. 529). Since the total of investment in these two categories (4.866 billion rubles) exceeds reported capital investment in "education, culture, art, and science" (4.525 billion rubles—above), the UNESCO data are believed to include a part of capital repair, probably budget-financed repair in these categories.

(2) Given this expanded definition of capital outlays, an estimate of capital outlays on education, culture, and art of 3.922 billion rubles was derived on the assumption that the UNESCO-reported figure for education (3.306 billion rubles) represented 84.3% of total capital outlays on education, culture, and art. The share is the ratio of total expenditures on education to total expenditures on education, culture, and art (*Narkhoz 1972*, p. 726).

(3) In turn, total capital outlays on the four categories are derived as 5.482 billion rubles, the sum of capital outlays on education, culture, and art (3.922 billion rubles) and on science (1.560 billion rubles). From this, the science share is calculated as 28.5%.

Capital repair is derived on the basis of (1) the estimated outlays for capital repair included in the figure reported to UNESCO (0.270 billion rubles—1.560 billion rubles less estimated investment of 1.290 billion rubles) and (2) the assumption that these outlays represented 55.9% of total outlays for capital repair. The share is the ratio of state budget outlays on science (6.543 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 25) to total outlays on science (11.7 billion rubles—above).

Science wages are calculated as the product of the number of workers (3,238,000—*Narkhoz 1972*, p. 505) and their annual average wage (1,641.6 rubles—*Ibid.*, p. 517).

Social insurance deductions are calculated at 5.5% of the wage bill. (See *Spravochnik partiynogo rabotnika*, p. 440.)

Materials purchases are derived as the difference between total current outlays and the sum of outlays for wages and social insurance deductions.

5. Outlays n.e.c. (defense, net exports, and unidentified outlays) and statistical discrepancy

Derived as the difference between total outlays (item 8) and the sum of items 1 through 4 and item 7.

6. Consolidated total value of goods and services, exclusive of sales to households

Derived as the sum of items 1 through 5.

7. Transfer outlays

Appendix A, item 8.

8. Consolidated total outlays

Equal to total incomes, Table 3, item 9.

Table D-1

USSR: Valuation of the Net Addition to Livestock Inventories,[1] 1970

	(1)	(2)	(3)	(4)	(5)
	Inventory of Animals		Net Addition to Livestock Inventories		
	End-1969[2]	End-1970[3]	Thousand Head[4]	Rubles per Head[5]	Billion Rubles[6]
	Thousand Head				
Total					**4.055**[7]
Cattle	95,162	99,225	4,063	442	1.796
Hogs	56,055	67,483	11,428	173	1.977
Sheep and goats	135,803	143,421	7,618	37	0.282
Socialized sector					**3.542**[7]
Cattle	70,173	74,272	4,099	442	1.812
Hogs	42,225	50,921	8,696	173	1.504
Sheep and goats	104,138	110,241	6,103	37	0.226
Private sector					**0.513**[7]
Cattle	24,989	24,953	−36	442	−0.016
Hogs	13,830	16,562	2,732	173	0.473
Sheep and goats	31,665	33,180	1,515	37	0.056

[1] A monetary valuation of the net addition to livestock inventories was estimated on the basis of the change in numbers of each of 4 animals—cattle, hogs, sheep, and goats—and the estimated average realized price per head for each type of animal.

[2] *Narkhoz 1970*, p. 352-353.

[3] *Narkhoz 1922–72*, p. 257.

[4] Column 2 minus column 1.

[5] For each type of animal an average realized live weight price expressed on a per head basis was derived as the product of (1) the average live weight per head procured by the state in 1970—309 kilograms for cattle, 107 kilograms for hogs, and 40 kilograms for sheep and goats (*Sel'skoye khozyaystvo*, 1971, p. 328)—and (2) the average realized price per ton of live weight meat—1,431 rubles per ton for cattle, 1,620 rubles per ton for hogs, and 935 rubles per ton for sheep and goats (from Table A-2, price entry of item *a.* (7) for parts 5A, 5B, and 5C).

[6] Column 3 multiplied by column 4, except where otherwise indicated.

[7] Derived as the sum of the parts.

Table D-2

USSR: Public Sector [1] Inventories,[2] 1969–70
(End-Year Data)

Billion Rubles

	1969 [3]	1970 [4]
Total working capital	191.389	211.837
Less:		
Money assets	15.502	16.523
Financial claims	13.014	15.676
Other working capital	0.766	0.847
Expenses of future periods	2.826	2.940
Livestock for fattening and young livestock	6.405	8.065
Equals:		
Inventories	**152.876**	**167.786**
Increment during the year		14.910

[1] State and cooperative enterprises and organizations, excluding collective farms.

[2] Public sector inventories are derived as the difference between total working capital of state and cooperative enterprises and organizations, excluding collective farms, as presented in official statistical yearbooks, and the sum of (1) financial assets therein—money, financial claims, other working capital, and expenses of future periods—and (2) the value of livestock for fattening and young livestock. Livestock inventories are accounted for in fixed capital.

[3] Total working capital of state and cooperative enterprises and organizations, excluding collective farms, is from *Narkhoz 1970*, p. 709. Money assets are calculated at 8.1%, financial claims at 6.8%, and "other working capital" at 0.4% of this total (*Ibid.*, p. 710). Expenses of future periods are calculated as 1.9% (*Ibid.*, p. 716) of total stocks of commodity-material values (148.742 billion rubles—*Ibid.*, p. 709). The entry for livestock for fattening and young livestock is calculated at 40.2% (*Ibid.*, p. 724) of total stocks of commodity-material values in state agriculture (15.934 billion rubles—*Ibid.*, p. 709).

[4] Total working capital is from *Narkhoz 1972*, p. 702. Money assets are calculated at 7.8%, financial claims at 7.4%, and "other working capital" at 0.4% of this total (*Ibid.*, p. 703). Expenses of future periods are calculated at 1.8% (*Ibid.*, p. 710) of total stocks of commodity-material values (163.356 billion rubles—*Ibid.*, p. 702). The entry for livestock for fattening and young livestock is calculated at 43.6% (*Ibid.*, p. 718) of total stocks of commodity-material values in state agriculture (18.497 billion rubles—*Ibid.*, p. 702).

Table D-3

USSR: Collective Farm Working Capital, 1968–70
(End-Year Data)

Billion Rubles

	1968[1]	1969[2]	1970[1]
Production assets	**15.580**	**16.862**	**18.439**
Productive stocks			
Seed	1.414	[3]	1.556
Feed	2.669	[3]	2.803
Petroleum products	[3]	[3]	[3]
Spare parts	0.427	[3]	0.487
Articles of little value which depreciate quickly	[3]	[3]	[3]
Other materials	[3]	[3]	[3]
Unfinished production			
Livestock for fattening and young livestock	7.492	8.111	9.337
Expenses for harvest of future year	1.760	[3]	2.008
Other unfinished production	[3]	[3]	[3]
Circulating assets	**6.164**	**5.656**	**6.466**
Finished production	0.988	0.905	0.798
Money assets	4.629	[4]	4.508
Of which:			
Current account in Gosbank	4.348	[4]	4.233
Special accounts for advances to collective farm members	0.031	[4]	0.004
Funds in settlement	0.547	[4]	1.160
Total working capital of collective farms	**21.744**	**22.518**	**24.905**
Of which:			
Inventories	9.076[5]	9.656[5]	9.900[5]
Increment during the year		0.580	0.244

[1] V. V. Kochkarev, *Oborotnyye sredstva kolkhozov*, Moscow, 1972, p. 11–12.

[2] Total production assets are from Kochkarev (*Ibid.*, p. 38). Total circulating assets are estimated from Kochkarev as the difference between total circulating assets and that part directed to capital investment (*Ibid.*). Total working capital is derived as the sum of the parts. Livestock for fattening and young livestock and finished production are estimated at the shares of production assets and circulating assets, respectively, obtaining for the items in 1968.

[3] Included in total production assets, above.

[4] Included in total circulating assets, above.

[5] Collective farm inventories are derived as the sum of production assets (excluding livestock for fattening and young livestock) and finished production.

E

APPENDIX E

Sources for Table 6. USSR: Gross National Product in Established Prices, by End Use, 1970

1. Consumption

a. *Goods*

(1) *Food*—Consumption of food is estimated at 107.667 billion rubles, the sum of retail sales of food and tobacco to the population (84.405 billion rubles), household purchases of food in collective farm ex-village markets (3.617 billion rubles), farm household consumption-in-kind, excluding wool (18.235 billion rubles), and the food portion of military subsistence (1.410 billion rubles).

Retail sales of food and tobacco to the population are estimated at 84.405 billion rubles, the difference between total retail sales of food and tobacco (88.948 billion rubles—*Narkhoz 1972*, p. 584–585) and institutional purchases (4.543 billion rubles). The latter estimate is derived as 63.3% of total institutional purchases of 7.177 billion rubles (Appendix B, item 1, a). The share is the 1968–69 share of food in total institutional purchases in the retail trade network. (See Zaytseva and Moroz, *op. cit.*, p. 36.)

Household purchases of food in collective farm ex-village markets are estimated at 3.617 billion rubles, the difference between total food purchases in collective farm ex-village markets (3.966 billion rubles) and institutional purchases of food in collective farm ex-village markets (0.349 billion rubles). Total food purchases in collective farm ex-village markets are derived on the basis of the percentage distribution of total food purchases between state and cooperative trade and collective farm markets (*Narkhoz 1972*, p. 576) and food purchases in state and cooperative trade alone (86.168 billion rubles—*Ibid.*, p. 584). Institutional purchases of food represent 95.7% of total institutional purchases in collective farm ex-village markets (0.365 billion rubles—Appendix B, item 1, b), the share derived for 1968–69 from Zaytseva and Moroz, *op. cit.*, p. 39.

Farm household consumption-in-kind, excluding wool, is calculated from Appendix A, Table A-2, part 10.

The food portion of military subsistence is from Appendix A, item 3, b.

(2) *Soft goods*—Consumption of soft goods is estimated at 45.720 billion rubles, the sum of retail sales of soft goods to the population (44.800 billion rubles), household purchases of soft goods in collective farm ex-village markets (0.218 billion rubles), farm household consumption-in-kind of wool (0.112 billion rubles), and the clothing allowance in military subsistence (0.590 billion rubles).

Retail sales of soft goods to the population are estimated at 44.800 billion rubles, the difference between total retail sales of soft goods (45.852 billion rubles) and institutional purchases of soft goods (1.052 billion rubles). Total retail sales of soft goods are derived as the sum of 44.961 billion rubles of identified retail sales of soft goods less tobacco (*Narkhoz 1972*, p. 584–585) and 0.891 billion rubles, representing 50% of the difference between (1) reported total retail sales of nonfood goods, less tobacco sales and producer goods, sold to farm households (see Appendix A, item 2, b) and (2) identified retail sales of nonfood goods (including services and film rentals—see Appendix B, item 1, a) less tobacco (*Ibid.*). In the absence of more specific data, the difference was allocated equally to soft goods and durables. (Identified retail sales of soft goods include sales of cloth, clothing, knitwear, shoes, laundry soap, synthetic cleaning materials, toilet soap and perfumes, haberdashery, matches, notebooks and paper, and printed goods.)

Institutional purchases of soft goods are estimated at 1.052 billion rubles, the sum of (1) identified soft goods purchases of 0.703 billion rubles (26.7% of institutions' total nonfood purchases of 2.634 billion rubles) and (2) an allowance of 0.349 billion rubles, representing 50% of the difference between institutions' total nonfood purchases (2.634 billion rubles) and the sum of their identified purchases of soft goods (0.703 billion rubles), durable goods (0.903 billion rubles), and investment goods (0.329 billion rubles) (1, a, (3),

below). Institutions' total nonfood purchases of 2.634 billion rubles are derived as the difference between total institutional purchases (7.177 billion rubles) and their food purchases (4.543 billion rubles) (1, a, (1), above). The share of the total represented by identified purchases of soft goods is that for 1968–69 established from Zaytseva and Moroz, *op. cit.*, p. 36–37.

Household purchases of soft goods in collective farm ex-village markets are estimated at 0.218 billion rubles, the difference between total household purchases in collective farm ex-village markets (3.835 billion rubles—Appendix B, item 1, b) and household purchases of food in collective farm ex-village markets (3.617 billion rubles—1, a, (1), above). All nonfood goods sold in collective farm ex-village markets are assumed to be soft goods.

Farm household consumption-in-kind of soft goods consists of wool consumed in-kind. (See Appendix A, Table A-2, part 7.)

The soft goods portion of military subsistence consists of clothing. (See Appendix A, item 3, b.)

(3) *Durable goods*—Consumption of durable goods is estimated at 13.975 billion rubles, the difference between total retail sales of durable goods (15.228 billion rubles) and institutional purchases of durable goods (1.253 billion rubles). Total retail sales of durable goods are derived as the sum of 14.336 billion rubles of identified retail sales of durable goods (*Narkhoz 1972*, p. 584–585) and 0.892 billion rubles, representing 50% of the difference between (1) reported total retail sales of nonfood goods less tobacco sales and producer goods sold to farm households (see Appendix A, item 2, a) and (2) identified retail sales of nonfood goods (including services and film rentals—see Appendix B, item 1, a) less tobacco (*Ibid.*). (Identified retail sales of durable goods include sales of furniture and metal beds, carpets, metal dishes, glass dishes, sporting goods, radio goods, musical instruments, toys, bicycles and motorbikes, watches, electrical goods, sewing machines, jewelry, and other household goods.)

Institutional purchases of durable goods are estimated at 1.253 billion rubles, the sum of (1) identified durable goods purchases (0.903 billion rubles—34.3% of institutions' total nonfood purchases of 2.634 billion rubles) and (2) an allowance for unidentified purchases (0.350 billion rubles). The allowance represents 50% of the difference between institutions' total nonfood purchases (2.634 billion rubles) and the sum of their identified purchases of soft goods (0.703 billion rubles—1, a, (2), above), durable goods (0.903 billion rubles—above), and investment goods (0.329 billion rubles). Purchases of investment goods by institutions consist of building materials. (See Appendix B, item 1, a.) Total nonfood purchases of institutions are from 1, a, (2), above. The share of the total represented by identified purchases of durable goods is that for 1968–69 established from Zaytseva and Moroz, *op. cit.*, p. 36–37.

b. *Services*

(1) *Trade union and other dues*—Table 2, item 2, a.

(2) *Housing*—Table 2, item 2, b.

(3) *Utilities*—Table 2, item 2, c, (1).

(4) *Personal transportation*—Table 2, item 2, c, (2).

(5) *Personal communications*—Table 2, item 2, c, (3).

(6) *Repair and personal care*—Table 2, item 2, c, (4).

(7) *Recreation, art, and physical culture*—Table 2, item 2, c, (5); Table 4, item 1, b; and Table 4, item 1, d.

(8) *Education*—Table 2, item 2, c, (6) and Table 4, item 1, a.

(9) *Health*—Table 2, item 2, c, (7), and Table 4, item 1, c.

2. Investment

Table 2, item 5 and Table 4, item 3.

a. *New fixed investment*

New fixed investment of 86.364 billion rubles is the sum of household outlays for private housing construction (2.029 billion rubles—Table 2, item 5, a); public sector (excluding collective farms) changes in warehouse stocks of equipment requiring installation (−0.137 billion rubles) and outlays for new investment (72.744 billion rubles) (Appendix D, item 3, a); collective farm new fixed investment (7.673 billion rubles—Appendix D, item 3, a); and the net addition to livestock inventories in the socialized and private sectors of agriculture (4.055 billion rubles—Appendix D, Table D-1).

(1) *Machinery and equipment—Narkhoz 1972*, p. 474.

(2) *Construction and other capital outlays* are estimated at 57.009 billion rubles, the difference between total new fixed investment (86.364 billion rubles—2, a, above) and the sum of investment in machinery and equipment (25.300 billion rubles—2, a, (1), above) and the net addition to livestock inventories (4.055 billion rubles—2, a, (3), below).

(3) *Net addition to livestock inventories in socialized and private sectors of agriculture*—Appendix D, Table D-1.

b. *Capital repair*

Capital repair of 18.611 billion rubles is the sum of public sector (excluding collective farms) expenditures (17.693 billion rubles) and collective farm expenditures (0.918 billion rubles). See Appendix D, item 3, a.

c. *Inventories*

Table 4, item 3, b.

3. Other public sector expenditures

a. *General administrative and miscellaneous services*

Table 4, item 2.

b. *Research and development (civilian and military)*

Table 4, item 4.

c. *Outlays n.e.c. (defense, net exports, and unidentified outlays) and statistical discrepancy*

Table 4, item 5.

4. Gross national product

Table 5.

F

APPENDIX F

Sources for Table 7. USSR: Gross National Product in Established Prices, by Sector of Origin, 1970

1. Wage bill

The total wage bill is derived as 135.352 billion rubles, the sum of state worker and employee wages and salaries (132.032 billion rubles—Table 1, item 1, a) and military pay (3.320 billion rubles—Table 1, item 3, a).

The state wage bill in industry is derived as 48.849 billion rubles in Table F-1, item 1.

The state wage bills in construction, agriculture, transportation, communications, and trade are each derived as the product of the sector's annual average employment and its annual average wage (*Narkhoz 1972*, p. 504–505, 516–517). The derivation is as follows:

Sector	Annual Average Employment (Million Persons)	Annual Average Wage (Rubles)	State Wage Bill (Billion Rubles)
Construction.....	9.052	1,799	16.285
Agriculture[1].....	8.593	1,211	10.406
Transportation.....	7.985	1,640	13.095
Communications....	1.330	1,162	1.545
Trade[2].....	7.537	1,141	8.600

[1] State farms and other state agricultural enterprises.

[2] Trade, public dining, material-technical supply and sales, and procurement.

The state wage bill in "other branches of material production" is derived as 0.473 billion rubles, the product of the estimated number of workers (323,000) and an annual average wage assumed equal to that of total state employees (1,464 rubles—*Narkhoz 1972*, p. 516). Employment in "other branches of material production" is derived as the difference between total reported employment in "other branches of material production" (998,000—*Narkhoz 1972*, p. 505) and estimated police employment (675,000—Appendix D, item 2, d, (3)).

The state wage bill in services is derived as 32.779 billion rubles, the difference between total state worker and employee wages and salaries (132.032 billion rubles—above) and the sum of the wage bills in industry, construction, agriculture, transportation, communications, trade, and other branches of material production (above).

2. Other and imputed income

Total other and imputed income of 62.223 billion rubles is the sum of the following:

Industry—2.200 billion rubles, derived as the sum of charges to enterprise costs for education (0.196 billion rubles—below) and research (2.004 billion rubles—below);

Construction—1.564 billion rubles, derived as the sum of private earnings in construction (0.239 billion rubles—Appendix A, item 4, a), the imputed value of owner-supplied building services (0.880 billion rubles—Table 1, item 6), charges to enterprise costs for education (0.066 billion rubles—below), and charges to enterprise costs for research (0.379 billion rubles—below);

Agriculture—41.619 billion rubles, derived as the sum of net income of households from agriculture (41.577 billion rubles—Table 1, item 2) and charges to enterprise costs for education (0.042 billion rubles—below);

Transportation—0.152 billion rubles, derived as the sum of charges to enterprise costs for education (0.053 billion rubles—below) and research (0.099 billion rubles—below);

Communications—0.017 billion rubles, derived as the sum of charges to enterprise costs for education (0.006 billion rubles—below) and research (0.011 billion rubles—below);

Trade—0.120 billion rubles, derived as the sum of charges to enterprise costs for education (0.035

billion rubles—below) and research (0.085 billion rubles—below);

Services—3.510 billion rubles (Table F-4, item 2);

Military personnel—2.000 billion rubles, representing military subsistence (Table 1, item 3, b);

Other branches of material production—0.002 billion rubles, representing charges to enterprise costs for education (below); and

Unallocated—11.039 billion rubles, representing unidentified money income and the statistical discrepancy (Table 1, item 4, b).

Total charges to enterprise costs to finance education—0.400 billion rubles (Appendix C, item 2, b)—are distributed among the sectors, with the exception of services (and excluding military personnel), by the percentage distribution of the state wage bill in the sectors (calculated from item 1, above).

Total charges to enterprise costs to finance research—2.578 billion rubles (Appendix C, item 2, b)—are distributed among industry, construction, transportation, communications, and trade by the percentage distribution of *sebestoimost'* (cost of production) in these five sectors. *Sebestoimost'* in industry, transportation, and communications is derived on the basis of a 1970 input-output table estimated by OER. *Sebestoimost'* in construction and trade is derived as the sum of wages, other and imputed income, social insurance deductions, and depreciation in the respective sectors (data of this table, items 1, 2, 3, and 5).

3. Social insurance

Total charges to economic enterprises for social insurance and social security are derived as 9.436 billion rubles (Table 3, item 2, a). Social insurance deductions in industry are derived as 3.531 billion rubles in Table F-1, item 3.

Social insurance deductions in construction (0.993 billion rubles), transportation (0.694 billion rubles), communications (0.082 billion rubles), trade (0.387 billion rubles), and other branches of material production (0.034 billion rubles) are derived as the product of the respective wage bills (from 1, above) and the following rates: construction, 6.1%; transportation, 5.3%; communications, 5.3%; trade, 4.5%; and other branches of material production, 7.2%. Rates, with the exceptions of the rate for communications (for which the transportation rate is used) and the rate for other branches of material production (for which the implied rate for total industry is used—Table F-2), are from *Spravochnik partiynogo rabotnika*, p. 440.

Social insurance deductions in agriculture are derived as 1.612 billion rubles, the sum of (1) deductions in state farms and other state agricultural enterprises (0.458 billion rubles—derived as the product of the total wage bill, 10.406 billion rubles—from 1, above—and the social insurance rate, 4.4%—*Ibid.*, p. 440); (2) social insurance charges paid on wages of hired agricultural workers (0.018 billion rubles—estimated on the basis of *Uchet i finansy v kolkhozakh i sovkhozakh*, no. 7, 1967, p. 14, at 4.4% of the hired worker wage bill, 0.413 billion rubles, Table 1, item 2, a, (2)); (3) deductions of collective farms into the All-Union Social Insurance Fund for Collective Farmers (0.356 billion rubles—Appendix C, item 2, a); and (4) deductions of collective farms into the All-Union Social Security Fund for Collective Farmers (0.780 billion rubles—Appendix C, item 2, a).

Social insurance deductions in services are derived as 2.103 billion rubles, the difference between total charges to economic enterprises for social insurance and social security (9.436 billion rubles—above) and the sum of these charges in industry, construction, agriculture, transportation, communications, trade, and other branches of material production (above).

4. Profits

Total profits are calculated at 89.154 billion rubles, the sum of profits distributed to consumer cooperative members (0.027 billion rubles—Table 1, item 1, b), net income retained by organizations (34.782 billion rubles—Table 3, item 1), tax on income of collective farms (0.666 billion rubles—Table 3, item 3, a), tax on income of consumer cooperatives and other organizations (0.569 billion rubles—Table 3, item 3, b), and deductions from profits of state enterprises (53.110 billion rubles—Table 3, item 3, c).

Profits in industry, transportation, communications, and construction are based on "net" profits of state enterprises and the percentage distribution of official statistical handbook data for profits of state enterprises and economic organizations in 1970. "Net" profits of state enterprises are derived as 79.591 billion rubles, the sum of retained profits of state enterprises (26.481 billion rubles—Table 3, item 1, b) and deductions from profits of state

enterprises (53.110 billion rubles—Table 3, item 3, c). The derivation is as follows:

Sector	Profits of State Enterprises, 1970		"Net" Profits of State Enterprises, 1970 (Billion Rubles)[2]
	Billion Rubles[1]	Percent	
Total	**85.668**	**100.0**	**79.591**
Industry	55.956	65.3	51.973
Construction	4.736	5.5	4.378
Agriculture[3]	5.067	5.9	4.696
Transportation	10.683	12.5	9.949
Communications	0.840	1.0	0.796
Trade	5.605	6.5	5.173
Communal economy	0.984	1.2	0.955
Other branches	1.797	2.1	1.671

[1] *Narkhoz 1972*, p. 697, except as noted below.

Profits in state farms, other state agricultural enterprises, and procurement organizations are given in the source as 6.117 billion rubles. Profits in procurement organizations of 1.050 billion rubles (estimated at one-half the difference between profits for the joint entry—6.117 billion rubles—and profits in state farms alone—4.018 billion rubles, *Ekonomika sel'skogo khozyaystva*, no. 7, 1972, p. 34) are removed from "agriculture" and are recorded in trade. Profits in state farms and other state agricultural enterprises are derived as the difference between the joint total and procurement profits.

Profits in transportation and communications are given in the source as 11.523 billion rubles. Profits in transportation are derived as the difference between the total for the two sectors and profits in communications alone of 0.840 billion rubles (TsSU, *Transport i svyaz' SSSR, statisticheskiy sbornik*, Moscow, 1972, p. 32, hereafter referred to as *Transport i svyaz'*, 1972).

Profits in trade are derived as the sum of (1) the source's entries for trade (2.859 billion rubles) and supply and sales (1.696 billion rubles) and (2) estimated profits of procurement organizations (1.050 billion rubles—above).

[2] "Net" profits of state enterprises differ from official statistical handbook data on profits of state enterprises (as presented in column 1) by the amount of profits counted elsewhere in the accounts: (1) bonuses paid from various profits-financed incentive funds (5.030 billion rubles, included in the wage bill and household income—see Appendix C, item 1, b for derivation) and (2) net receipts of the state insurance organization (1.047 billion rubles, recorded as transfer receipts of the Public Sector—for explanation, see Appendix C, item 3, c).

Total "net" profits are distributed among the sectors by the percentage distribution in column 2.

[3] State farms and other state agricultural enterprises.

Profits in agriculture are derived as 12.548 billion rubles, the sum of "net" profits in state farms and other state agricultural enterprises (4.696 billion rubles—above), retained income of collective farms (7.186 billion rubles—Table 3, item 1, a), and income taxes of collective farms (0.666 billion rubles—Table 3, item 3, a).

Profits in trade are derived as 6.456 billion rubles, the sum of "net" profits (5.173 billion rubles—above), profits distributed to consumer cooperative members (0.027 billion rubles—Table 1, item 1, b), retained profits of consumer cooperatives (0.794 billion rubles—Table 3, item 1, c), and income taxes of consumer cooperatives (0.462 billion rubles—see Appendix C, item 1, c).

Profits in services are derived as 3.054 billion rubles in Table F-4, item 4. The estimate includes "net" profits of the communal economy and "other branches" (above) and estimated profits in recreation, art, and physical culture (see Table F-4, item 4).

5. Depreciation

Total depreciation is derived as 31.827 billion rubles (Table 3, item 6). The distribution by sector of the economy is based on official statistical handbook data for amortization deductions of state enterprises and economic organizations and consumer cooperatives, adjusted to exclude estimated depreciation on housing (believed included in the official handbook data). The adjustment is made in order to record housing depreciation wholly in services. The allocation of housing depreciation (1.151 billion rubles—derived in Table F-4, item 5) among the sectors (excluding "other branches") is based on the percentage distribution of employment by sector of the economy computed from the following employment data for 1970: industry (31,593,000), construction (9,052,000), agriculture (8,593,000), transportation (7,985,000), communications (1,330,000), trade (7,537,000), and communal economy (1,495,000). Employment numbers, with the exception of employment in the communal economy, are from *Narkhoz 1972*, p. 504–505. Employment in the communal economy is derived as the difference between total employment in "housing-communal economy and everyday services" (3,052,000—*Ibid.*, p. 505) and estimated employment in housing alone (1,557,000—Table F-4, item 1). The derivation is presented in the tabulation following on p. 68.

Depreciation in agriculture is derived as 5.561 billion rubles, the sum of amortization deductions in state agriculture, net of housing depreciation (2.839 billion rubles—below) and amortization deductions in collective farms (2.722 billion rubles—Appendix C, item 6).

Depreciation in services is derived as 1.752 billion rubles, the sum of amortization deductions, net of housing depreciation, in the communal economy (0.601 billion rubles—below) and housing deprecia-

Distribution of Amortization Deductions, Net of Housing Depreciation, by Sector of the Economy

	Amortization Deductions,[1] 1970 (Billion Rubles)	Housing Depreciation,[2] 1970 (Billion Rubles)	Amortization Deductions Net of Housing Depreciation[3] (Billion Rubles)
Total	**29.105**	**1.151**	**27.954**
Industry	15.544	0.538	15.006
Construction	2.313	0.154	2.159
State agriculture	2.985	0.146	2.839
Transportation	5.002	0.136	4.866
Communications	0.408	0.023	0.385
Trade	1.568	0.129	1.439
Communal economy	0.626	0.025	0.601
Other branches	0.659	Not app.	0.659

[1] *Narkhoz 1972*, p. 723, except as noted below. Amortization deductions in trade are derived as the sum of the source's entries for trade, supply and sales, procurement, and consumer cooperatives. Amortization deductions in transportation and communications are given in the source as 5.410 billion rubles. Amortization deductions in transportation are derived as the difference between the total for the two sectors and estimated amortization deductions in communications alone of 0.408 billion rubles. Amortization deductions in communications are derived as 6.8% of the 1970 annual average stock of fixed capital in communications (6 billion rubles—*Transport i svyaz'*, 1972, p. 31; *Narkhoz 1969*, p. 46; *Narkhoz 1970*, p. 61).

[2] The total is distributed among the sectors, excluding "other branches," on the basis of the following employment distribution: industry, 46.7%; construction, 13.4%; state agriculture, 12.7%; transportation, 11.8%; communications, 2.0%; trade, 11.2%; and communal economy, 2.2%. Shares are calculated from the employment data cited above, p. 67.

[3] Derived as column 1 less column 2.

tion (1.151 billion rubles—derived in Table F-4, item 5).

Depreciation in "other branches of material production" is estimated at 0.050 billion rubles on the basis of (1) the stock of fixed capital in these areas in 1966 (as revealed in the 1966 input-output table) and estimated depreciation thereon (see Vladimir G. Treml, Dimitri M. Gallik, Barry L. Kostinsky, and Kurt W. Kruger, *The Structure of the Soviet Economy—Analysis and Reconstruction of the 1966 Input-Output Table*, Praeger Publishers, Inc., 1972, p. 324) and (2) an allowance for growth in fixed capital in the four-year period.

In turn, the difference between the official statistical handbook residual entry for amortization deductions in "other branches" (0.659 billion rubles—above) and the estimated depreciation in "other branches of material production" (0.050 billion rubles) is entered as unallocated. These amortization deductions are thought to represent depreciation in *khozraschet* organizations within the nonproductive sphere. However, no means are at hand by which to distribute the depreciation within the service sector.

6. Turnover and other indirect taxes

Total indirect taxes of 72.172 billion rubles are the sum of the following:

Industry—49.890 billion rubles, derived as the sum of turnover tax (49.380 billion rubles—Table 3, item 3, d) and price markups on radio and television sets paid to the budget (0.510 billion rubles—see Appendix C, item 3, e);

Agriculture—0.080 billion rubles, derived as the sum of indirect taxes paid by farm households (0.050 billion rubles—Appendix A, item 2, b); indirect taxes paid by collective farms (0.020 billion rubles—Appendix C, item 1, a); and indirect taxes paid by state farms (0.010 billion rubles—estimated at one-half the amount paid by collective farms);

Trade—0.063 billion rubles, representing rental income of property of local soviets (Appendix C, item 3, e);

Services—0.670 billion rubles (Table F-4, item 6); and

Unallocated—21.469 billion rubles, derived as the difference between miscellaneous charges (22.792 billion rubles—Table 3, item 3, e) and the sum of price markups on radio and television sets and indirect taxes in agriculture, trade, and services (above).

7. Subsidies

Total subsidies and their distribution by sector of the economy are derived in Appendix C, item 4.

8. Total

Derived as the sum of items 1 through 6, less item 7.

Table F-1

USSR: Gross National Product Originating in Industry, in Established Prices,[1] 1970

Billion Rubles

	(1) State Wage Bill	(2) Other and Imputed Income	(3) Social Insurance	(4) Profits	(5) Depreciation	(6) Turnover and Other Indirect Taxes	(7) Less: Subsidies	(8) Total
Industry, total	48.849	2.200	3.531	51.973	15.006	49.890	14.330	157.119
Electric power	1.050	0.047	0.069	3.222	2.386	0.494	0	7.268
Petroleum products and gas	0.652	0.051	0.055	4.002	1.081	3.506	0	9.347
Coal	3.004	0.066	0.270	0.780	0.825	0	0	4.945
Nonferrous metals	1.372	0.072	0.108	2.495	0.780	0	0	4.827
Chemicals	2.575	0.124	0.216	3.430	1.336	0.444	0	8.125
Machine building and metal-working	19.180	0.521	1.476	12.889	2.986	3.572	0	40.624
Ferrous metals	2.502	0.138	0.198	3.742	1.561	0.148	0	8.289
Forest products	4.175	0.106	0.196	1.975	0.510	0.148	0	7.110
Pulp and paper	0.406	0.016	0.019	0.468	0.225	0.049	0	1.183
Construction materials	3.714	0.098	0.227	1.507	1.005	0.296	0	6.847
Light industry	5.099	0.356	0.346	6.445	0.675	14.370	1.340	25.951
Processed foods	4.125	0.522	0.280	6.808	1.276	26.023	12.990	26.044
Other industry	0.995	0.083	0.071	4.210	0.360	0.840	0	6.559

[1] Sources:

1. State wage bill

The state wage bill in industry of 48.849 billion rubles and the wage bills in branches of industry as recorded here exclude wages of industrial workers performing repair and personal care services. These personnel (numbering 1,248,000) are, in fact, engaged in "everyday services" and are, together with their wages of 1.700 billion rubles, counted in services instead of industry. The derivation of wage bills in industry as a whole and in branches of industry, including the wages of workers performing repair and personal care services, is presented in Table F-2.

2. Other and imputed income

Appendix F, item 2.

3. Social insurance

Social insurance deductions in industry of 3.531 billion rubles and social insurance deductions in branches of industry as recorded here exclude social insurance deductions of 0.120 billion rubles made for industrial workers performing repair and personal care services. (These deductions are counted in services instead.) The derivation of social insurance deductions in industry as a whole and in branches of industry, of which for workers performing repair and personal care services, is presented in Table F-2.

4. Profits

"Net" profits in industry are derived as 51.973 billion rubles in Appendix F, item 4. The distribution of "net" profits by branch of industry is based on the percentage distribution of official statistical handbook data for profits by branch of industry in 1970. The derivation is presented in the first tabulation following on p. 70.

Profits of repair and personal care services performed by industrial enterprises cannot be estimated for deduction here. These profits, however, are believed to be insignificant.

5. Depreciation

Depreciation in industry is derived as 15.006 billion rubles in Appendix F, item 5. The distribution of depreciation by branch of industry is based on the percentage distribution of the 1970 annual average stock of industrial fixed capital, net of wear and tear (from Table F-3, column 7). That part of depreciation included in industry for enterprises engaged in repair and personal care services cannot be estimated.

6. Turnover and other indirect taxes

Total turnover and other indirect taxes in industry are derived as 49.890 billion rubles in Appendix F, item 6. The turnover tax portion—49.380 billion rubles (Table 3, item 3, d)—is distributed among the branches of industry according to the percentage distribution calculated from a breakdown of turnover tax payments given for 1969 in S. V. Borovik and N. A. Plashchinskiy, *Obrazovaniye fondy proizvodstvennogo nakopleniya v promyshlennosti*, Minsk, 1972, p. 179. The derivation is presented in the second tabulation following on p. 70.

No turnover tax is levied on coal and ferrous metals. (See Vladimir G. Treml, Barry L. Kostinsky, Kurt W. Kruger, and Dimitri M. Gallik, *Conversion of Soviet Input-Output Tables to Producers' Prices: The 1966 Reconstructed Table*, US Depart-

Distribution of "Net" Profits by Branch of Industry
(Item 4, above, continued)

Branch	Profits, 1970 Billion Rubles[1]	Percent	"Net" Profits, 1970 (Billion Rubles)[2]
Total	**55.956**	**100.0**	**51.973**
Electric power	3.464	6.2	3.222
Petroleum products and gas	4.292	7.7	4.002
Coal	0.844	1.5	0.780
Nonferrous metals	2.699	4.8	2.495
Chemicals	3.708	6.6	3.430
Machine building and metalworking	13.887	24.8	12.889
Ferrous metals	3.999	7.2	3.742
Forest products	2.103	3.8	1.975
Pulp and paper	.0.484	0.9	0.468
Construction materials	1.611	2.9	1.507
Light industry	6.962	12.4	6.445
Processed foods	7.350	13.1	6.808
Other industry	4.553	8.1	4.210

[1] *Narkhoz 1972*, p. 699, except as noted below. Profits in "other industry" are derived from the source as the difference between total industrial profits and the sum of profits in the listed branches of industry.

Profits in nonferrous metals are estimated on the basis of the ratio of profits in ferrous metals to profits in all metallurgy—59.7%. This ratio is that derived for 1971 from reported profits in ferrous metals of 4.0 billion rubles (*Ibid.*) and reported profits in all metallurgy of 6.7 billion rubles (N. G. Sycheva, editor, *Finansy predpriyatiy i otrasley narodnogo khozyaystva*, Moscow, 1973, p. 134).

[2] The total is distributed among the branches by the percentage distribution in column 2.

Distribution of Turnover Tax by Branch of Industry
(Item 6, above, continued)

Branch	Turnover Tax, 1969 Billion Rubles	Percent	Turnover Tax,[1] 1970 (Billion Rubles)
Total	**44.792[2]**	**100.0**	**49.380**
Electric power	0.458	1.0	0.494
Petroleum	3.187	7.1	3.506
Chemicals	0.427	0.9	0.444
Machine building and metalworking	2.764	6.2	3.062
Ferrous metals	0.155	0.3	0.148
Forest products	0.140[3]	0.3	0.148
Pulp and paper	0.035[3]	0.1	0.049
Construction materials	0.255	0.6	0.296
Light industry	13.031	29.1	14.370
Processed foods	23.587	52.7	26.023
Other industry	0.754	1.7	0.840

[1] The total is distributed among the branches by the percentage distribution in column 2.

[2] The sum of the entries equals 44.793 billion rubles. The percentage distribution is the same when computed with either total.

[3] Turnover tax for the timber, woodworking, and pulp-paper branches, given in the source as 0.175 billion rubles, is allocated 80% to forest products and 20% to pulp and paper on the basis of the branches' approximate shares in total profits in the two branches. (See item 4, above.)

ment of Commerce, Bureau of Economic Analysis, Foreign Economic Reports, No. 1, July 1973, p. 20–21.)

Turnover and other indirect taxes in machine building and metalworking (MBMW) are derived as the sum of the 1970 turnover tax shown above for MBMW (3.062 billion rubles) and price markups on radio and television sets that are produced in the radiotechnical branch of MBMW (0.510 billion rubles—see Appendix C, item 3, e).

7. Subsidies

Total subsidies to industry are estimated as 14.33 billion rubles (Appendix C, item 4 and Table C-1). Subsidies to light industry of 1.34 billion rubles are the sum of estimated subsidies on government purchases of (1) wool (0.14 billion rubles); (2) sunflower and other oil seeds, hemp, flax, kenaf, and hides (0.05 billion rubles—estimated at approximately one-half the aggregate entry for these commodities); and (3) cotton (1.15 billion rubles). Subsidies to the processed food industry of 12.99 billion rubles are the sum of estimated subsidies on government purchases of meat, milk, eggs, grain, potatoes, vegetables, sugar beets, and the remainder of the aggregate subsidy on sunflower seeds and other oil seeds, hemp, flax, kenaf, and hides.

8. Total

Derived as the sum of items 1 through 6, less item 7.

Table F-2

USSR: Wages and Social Insurance Deductions in Branches of Industry, 1970

	Wage and Salary Workers[1] (Thousand Persons)	State Wage Bill[2] (Billion Rubles)	Social Insurance Rate[3] (Percent)	Social Insurance Deductions[4] (Billion Rubles)
Industry, total	**31,593**	**50.549**	**7.2**	**3.651**
Electric power	633	1.050	6.6	0.069
Petroleum products and gas	354	0.652	8.4	0.055
Coal	1,120	3.004	9.0	0.270
Nonferrous metals	745	1.372	7.9	0.108
Chemicals	1,568	2.575	8.4	0.216
Machine building and metalworking	12,017	19.378	7.7	1.492
Of which, Repair and personal care services:				
Repair of household machines and appliances	108.9	0.176	7.7	0.014
Repair of private automobiles	13.4	0.022	7.7	0.002
Ferrous metals	1,359	2.502	7.9	0.198
Forest products	2,589	4.217	4.7	0.198
Of which, Repair and personal care services:				
Repair and manufacture of furniture for individuals	25.5	0.042	4.7	0.002
Pulp and paper	259	0.406	4.7	0.019
Construction materials	2,258	3.714	6.1	0.227
Light industry	5,019	6.219	6.8	0.423
Of which, Repair and personal care services:				
Repair and custom making of shoes for individuals	137.9	0.171	6.8	0.012
Repair and custom making of clothing for individuals	709.5	0.879	6.8	0.060
Repair and custom making of knit goods for individuals	56.8	0.070	6.8	0.005
Processed foods	2,901	4.125	6.8	0.280
Other industry	771	1.335	7.2	0.096
Of which, Repair and personal care services:				
Dry cleaning	37.1	0.064	7.2	0.005
Laundries	65.6	0.114	7.2	0.008
Other everyday services	93.3	0.162	7.2	0.012

[1] Data are from *Vestnik statistiki*, no. 11, 1972, p. 93, with the exceptions of entries for petroleum products and gas, nonferrous metals, all repair and personal care services, and "other industry." Employment in "other industry" is derived as the difference between the total for industry and the sum of the entries for all other branches. The entry for forest products is derived from the source as the difference between total employment in the timber, woodworking, and pulp-paper branches and employment in the pulp-paper industry only. The entry for construction materials is the sum of the source's entries for construction materials, glass, and porcelain products.

Employment in petroleum products and gas is derived as the difference between estimated total employment in petroleum products, gas, and coal (1,474,000) and employment in the coal industry alone (1,120,000—*Ibid.*). Employment in major fuels is estimated on the basis of (1) total employment in fuels (1,542,000—*Narkhoz 1972*, p. 181) and (2) the assumption that employment in these fuels could be approximated by their share in the 1970 fuel balance— that is, at 95.6% of the total (*Ibid.*, p. 205).

Employment in nonferrous metals is estimated by Stephen Rapawy in an unpublished work (Stephen Rapawy, *Estimates of Man-Hour Employment in Selected Branches of Industry, USSR: 1950-1971*, US Department of Commerce, Bureau of Economic Analysis, Foreign Demographie Analysis Division, November 1973).

The number of industrial workers engaged in each repair and personal care service is from *Vestnik statistiki*, no. 8, 1973, p. 95, with half of the source's entry for employment in "other everyday services" attributed to industry and recorded here under "other industry." Classification of industrial workers engaged in repair and personal care services by branch of industry is based on Gosplan SSSR, *Metodicheskiye ukazaniya k razrabotke gosudarstvennykh planov razvitiya narodnogo khozyaystva SSSR*, Moscow. 1974, p. 706-746 (hereafter referred to as *Metodicheskiye ukazaniya*, 1974).

[2] Data are from *Vestnik statistiki*, no. 11, 1972, p. 94, with the exceptions of entries for petroleum products and gas, nonferrous metals, all repair and personal care services, and "other industry." The wage bill in "other industry" is derived as a residual, the total wage bill in industry less the sum of the wage bills in all other branches. The entry for forest products is derived from the source as the difference between the total wage bill in the timber, woodworking, and pulp-paper branches and the wage bill in the pulp-paper industry only. The entry for construction materials is the sum of the source's entries for construction materials, glass, and porcelain products.

The wage bills in the petroleum products and gas and nonferrous metals branches are each derived as the product of the branch's employment data of the first column and the implied annual average wage in ferrous metals (1,841.1 rubles).

The wage bills in repair and personal care services are based on employment data of the first column and the implied annual average wage in their respective branches of industry.

[3] Rates are those for 1968, when social insurance rates were last revised. With the exceptions of the rate for industry as a whole, the rates for all repair and personal care services, and the rate for "other industry," rates are from *Spravochnik partiynogo rabotnika*, p. 439–440. The data given therein for several joint categories are assumed applicable for each component of the category. These include oil and chemistry, metallurgy (used for ferrous and nonferrous), forest products and paper, and *mashinostroyeniye* (used for all MBMW).

The rate for industry as a whole is derived by dividing total social insuranee deductions by the total wage bill. The rates for repair and personal eare services are assumed equal to the rates for their respective braneches of industry. The rate for "other industry" is an average of individual braneh rates weighted by the pereentage distribution of the wage bill (excluding the wage bill in "other industry").

[4] Derived for each entry, with the exception of that for industry as a whole, as the product of the state wage bill and the social insurance rate. The entry for industry as a whole is derived as the sum of the parts.

Table F-3

USSR: Fixed Capital in Branches of Industry, 1970

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Capital, End-1969		Fixed Capital, End-1970		Annual Average Fixed Capital, 1970		
						Net of Wear and Tear	
	Percent[1]	Billion Rubles[2]	Percent[1]	Billion Rubles[2]	Billion Rubles[3]	Billion Rubles[4]	Percent[5]
Industry, total	100.0	208[6]	100.0	227	217.4960	163.122	100.0
Electric power	15.8	32.864	15.9	36.093	34.4785	25.859	15.9
Petroleum products and gas	7.2	14.976	7.2	16.344	15.6600	11.745	7.2
Coal	5.6	11.648	5.4	12.258	11.9530	8.965	5.5
Nonferrous metals	5.2	10.816	5.2	11.804	11.3100	8.482	5.2
Chemicals	8.7	18.096	9.1	20.657	19.3765	14.532	8.9
Machine building and metalworking	19.7	40.976	20.1	45.627	43.3015	32.476	19.9
Ferrous metals	10.3	21.424	10.4	23.608	22.5160	16.887	10.4
Forest products	3.5	7.280	3.4	7.718	7.4990	5.624	3.4
Pulp and paper	1.5	3.120	1.5	3.405	3.2625	2.447	1.5
Construction materials	6.7	13.936	6.6	14.982	14.4590	10.844	6.7
Light industry	4.5	9.360	4.5	10.215	9.7875	7.341	4.5
Processed foods	8.6	17.880	8.5	19.295	18.5875	13.941	8.5
Other industry	2.7	5.616	2.2	4.994	5.3050	3.979	2.4

[1] Percentage shares, with the exceptions of those for nonferrous metals and "other industry," are from *Narkhoz 1969*, p. 174–175 (for end-1969) and *Narkhoz 1970*, p. 166–167 (for end-1970). The data are for industrial enterprises operating on an independent balance sheet. In the absence of other information, the shares are accepted as applicable for all industrial enterprises.

For each year the entry for petroleum products and gas is the sum of the source's data for oil extraction, oil refining, and gas; the nonferrous metals share is estimated at 50% of the source's ferrous metals share; the forest produets entry is derived as the difference between the source's share for the timber, woodworking, and pulp-paper branches and that for the pulp-paper industry only; the entry for construction materials is the sum of the source's shares for construction materials and glass and porcelain; and the share for "other industry" is derived as the column's residual.

[2] Total industrial fixed capital of 208 billion rubles at end-1969 (*Narkhoz 1969*, p. 46) and 227 billion rubles at end-1970 (*Narkhoz 1970*, p. 61) is distributed among the branches of industry according to the shares of column (1) (for end-1969) and column (3) (for end-1970).

[3] Annual average fixed capital is derived as the average of columns (2) and (4).

[4] Annual average fixed capital, net of wear and tear, is estimated as 75% of column (5), based on the ratio of wear and tear to fixed capital at replacement costs—25%—revealed in the 1959 official inventory and revaluation of fixed capital. (See *Narkhoz 1959*, p. 75.)

[5] Column (6) expressed in percent.

[6] The column's entries sum to 207.992. This calculated total is used in deriving the total for column 5.

Table F-4

USSR: Gross National Product Originating in Services, in Established Prices,[1] 1970

Billion Rubles

	(1) State Wage Bill	(2) Other and Imputed Income	(3) Social Insurance	(4) Profits	(5) Depreciation	(6) Indirect Taxes	(7) Less: Subsidies	(8) Total
Services, total	**32.779**	**3.510**	**2.103**	**3.054**	**1.752**	**0.670**	**3.262**	**40.606**
Housing	1.766	2.037	0.083	0	1.151	0.211	2.086	3.162
Utilities	0.590	0	0.028	0.955	0.444	0	0	2.017
Repair and personal care	2.249	0.843	0.146	N.A.	0.066	0	0	3.304
Recreation, art, and physical culture	0.861	0.484	0.047	0.428	0.091	0.459	1.176	1.194
Education	9.333	0.093	0.513	0	0	0	0	9.939
Health	5.319	0.053	0.292	0	0	0	0	5.664
Science (R&D)	5.316	0	0.292	0	0	0	0	5.608
Credit and insurance	0.519	0	0.029	1.671	N.A.	0	0	2.219
Government administrative and miscellaneous services	6.306	0	0.328	0	0	0	0	6.634
General agricultural programs	0.722	0	0.032	0	0	0	0	0.754
Forest economy	0.525	0	0.023	0	0	0	0	0.548
Apparat	2.499	0	0.137	0	0	0	0	2.636
Culture	0.856	0	0.047	0	0	0	0	0.903
Municipal services	0.454	0	0.021	0	0	0	0	0.475
Civilian police	0.988	0	0.054	0	0	0	0	1.042
Administrative organs of social organizations	0.262	0	0.014	0	0	0	0	0.276
Statistical discrepancy	0.520	Not app.	0.345	Not app.	Not app.	Not app.	Not app.	0.865

[1] Sources:

1. State wage bill

The total state wage bill in services is derived as 32.779 billion rubles in Appendix F, item 1.

Housing wages are derived as 1.766 billion rubles, the product of the number of workers (1,557,000—estimated at 51% of total employment in "housing-communal economy and everyday services"—*Narkhoz 1972*, p. 505) and an annual average wage assumed equal to that for the branch as a whole (1,134 rubles—*Ibid.*, p. 517). The share of the branch's employment attributed to housing—51%—is an extension of the trend observed from data giving housing employment as 55% of the branch's total employment in 1960 and 53% in 1966 (V. P. Korchagin and L. S. Sbytova, *Sfera uslug i zanyatost' naseleniya*, Moscow, 1970, p. 110).

Utilities wages are derived as 0.590 billion rubles, the product of the estimated number of workers (520,100) and an annual average wage assumed equal to that for the branch as a whole (1,134 rubles—above). The number of workers in utilities is derived as the difference between total employment in "housing-communal economy and everyday services" (3,052,000—*Narkhoz 1972*, p. 505) and the sum of employment in (1) housing (1,557,000—above); (2) hotels (91,000—Appendix B, item 2, c, (1)); (3) general city service and administration (400,000—Appendix D, item 2, d, (2)); and (4) nonproductive everyday services (483,900). The number of workers in nonproductive everyday services is derived from *Vestnik statistiki*, no. 8, 1973, p. 95, as the sum of employment in bathhouses and showers, barber shops, rental points, and other services. Employment in other services is estimated at half the source's entry for employment in "other everyday services." (For a listing of nonproductive everyday services, see *Metodicheskiye ukazaniya*, 1974, p. 776.)

Repair and personal care wages are derived as 2.249 billion rubles, the sum of wages in nonproductive services of "housing-communal economy and everyday services" (0.549 billion rubles) and wages in productive services (1.700 billion rubles). Wages in "housing-communal economy and everyday services" are calculated as the product of the number of workers (483,900—above) and an annual average wage assumed equal to that for the branch as a whole (1,134 rubles—above). Wages in productive services are derived from Table F-2 as the sum of wages of industrial workers engaged in repair and personal care services.

Recreation, art, and physical culture wages are derived as 0.861 billion rubles, the sum of wages in hotels (0.103 billion rubles—Appendix B, item 2, c, (1)), art (0.469 billion rubles—Appendix D, item 1, b), and physical culture (0.289 billion rubles—Appendix D, item 1, d).

Education wages are derived as 9.333 billion rubles in Appendix D, item 1, a.

Health wages are derived as 5.319 billion rubles in Appendix D, item 1, c.

Science (R&D) wages are derived as 5.316 billion rubles in Appendix D, item 4.

Credit and insurance wages are derived as 0.519 billion rubles, the product of the number of workers (388,000—*Narkhoz 1972*, p. 505) and their annual average wage (1,336.8 rubles—*Ibid.*, p. 517).

Government administrative and miscellaneous services wages are derived as the sum of wages in general agricultural programs (Appendix D, item 2, a), forest economy (Appendix

D, item 2, b), state administration or *apparat* (Appendix D, item 2, c), culture (Appendix D, item 2, d, (1)), municipal services (Appendix D, item 2, d, (2)), civilian police (Appendix D, item 2, d, (3)), and administrative organs of social organizations (Appendix D, item 2, d, (4)).

The statistical discrepancy in wages is the difference between the total state wage bill in services and the sum of wages in the itemized services.

2. Other and imputed income

Total other and imputed income of 3.510 billion rubles is the sum of the following:

Housing—2.037 billion rubles, derived as the sum of imputed net rent (1.080 billion rubles—Appendix B, item 2, b, (2)) and wages earned in private repair of housing (0.957 billion rubles—Appendix B, item 2, b, (3));

Repair and personal care—0.843 billion rubles, representing income from private supplied services other than housing repair (Appendix A, item 4, a);

Recreation, art, and physical culture—0.484 billion rubles, consisting of payments to private persons for room rentals (Appendix A, item 4, a);

Education—0.093 billion rubles, representing wages earned in private activity (Appendix A, item 4, a); and

Health—0.053 billion rubles, representing wages earned in private activity (Appendix A, item 4, a).

3. Social insurance

Total social insurance deductions in services are derived as 2.103 billion rubles in Appendix F, item 3. Social insurance deductions in each of the services are based on the respective wage bills (from 1, above) and social insurance rates given in *Spravochnik partiynogo rabotnika*, p. 439–440, or assumed therefrom. The rate for housing and utilities (4.7%) is the rate for "local industry and communal everyday service" enterprises; the rate for nonproductive services in repair and personal care (4.7%) is also the rate for "local industry and communal everyday service" enterprises; the rates for productive services in repair and personal care are the rates of the respective branches of industry in which the repair and personal care services are classified (for derivation of these social insurance deductions, see Table F-2); and the rate for credit and insurance (5.5%) is the rate for "state institutions."

Recreation, art, and physical culture social insurance deductions are the sum of deductions on hotel wages (0.005 billion rubles—Appendix B, item 2, c, (1)), deductions in art (0.026 billion rubles—Appendix D, item 1, b), and deductions in physical culture (0.016 billion rubles—Appendix D, item 1, d).

Social insurance deductions in education are derived in Appendix D, item 1, a; health, Appendix D, item 1, c; science, Appendix D, item 4; general agricultural programs, Appendix D, item 2, a; forest economy, Appendix D, item 2, b; state administration (*apparat*), Appendix D, item 2, c; culture, Appendix D, item 2, d, (1); municipal services, Appendix D, item 2, d, (2); civilian police, Appendix D, item 2, d, (3); and administrative organs of social organizations, Appendix D, item 2, d, (4).

The social insurance statistical discrepancy is the difference between total social insurance deductions in services and the sum of social insurance deductions in the itemized services.

4. Profits

Total profits of 3.054 billion rubles are derived as the sum of estimated utilities profits (0.955 billion rubles); profits in recreation, art, and physical culture (0.428 billion rubles); and credit and insurance profits (1.671 billion rubles).

Utilities are allocated all of the profits attributed to the communal economy in the distribution of "net" profits of state enterprises presented in Appendix F, item 4. A variety of evidence indicates that utilities are highly profitable while hotels and personal services make low profits or incur losses.

Profits of repair and personal care services are included in profits of industry and the communal economy. While these profits cannot be estimated, the literature states that everyday service enterprises are either unprofitable or make low profits.

Profits in recreation, art, and physical culture are estimated at 0.428 billion rubles, the sum of retained earnings of "other organizations" (0.321 billion rubles—Table 3, item 1, d) and income taxes paid by these organizations (0.107 billion rubles—derived in Appendix C, item 1, d).

Credit and insurance enterprises are allocated all profits estimated for "other branches" in the distribution of "net" profits of state enterprises presented in Appendix F, item 4.

5. Depreciation

Depreciation of 1.752 billion rubles is the sum of housing depreciation (1.151 billion rubles) and amortization deductions in the communal economy net of housing depreciation (0.601 billion rubles—Appendix F, item 5).

Housing depreciation consists of expenditures on capital repair of urban public housing. These expenditures, estimated at 1.151 billion rubles, are derived as the difference between actual expenditures on current and capital repair of urban public housing in 1970 (about 2 billion rubles—*Voprosy ekonomiki*, no. 9, 1972, p. 45) and estimated expenditures on current repair alone (0.849 billion rubles). Expenditures on current repair are estimated as the product of the midyear stock of urban public housing (0.696 billion square meters of living space—Appendix B, item 2, b, (1)) and current repair expenditures (based on RSFSR data) of 1.22 rubles per square meter of living space (*Ibid.*). All of these expenditures on capital repair of housing are assumed to be included in the official statistical handbook data on amortization deductions reported by branch of the economy. This assumption is based on the premise that since housing organizations under the jurisdiction of enterprises and organizations own about two-thirds of all urban housing and local soviets the rest (*Voprosy ekonomiki*, no. 9, 1972, p. 49), most or all of such charges are probably included in the annual official statistical handbook reporting.

Amortization deductions in the communal economy, net of housing depreciation, of 0.601 billion rubles (Appendix F, item 5) are distributed among utilities, repair and personal care, and recreation, art, and physical culture on the basis of the percentage distribution of the stock of fixed capital in the communal economy of local soviets of the RSFSR at the end of 1967. The percentage distribution (given in A. I. Faynberg, *et al.*, *Ekonomika organizatsiya i planirovaniye gorod'skogo khozyaystva*, Moscow, 1969, p. 121) has been adjusted here to exclude the fixed capital of city passenger electric transport that is recorded in the fixed capital of the transportation sector in statistical handbooks (*Ibid.*, 117). The derivation follows on page 77.

Depreciation in utilities is derived as 0.444 billion rubles, the sum of amortization deductions for water and sewer and electricity and gas. Depreciation in repair and personal care is derived as 0.066 billion rubles, the sum of amortization deductions for baths and half of the amortization deductions

Distribution of Amortization Deductions, Net of Housing Depreciation, in the Communal Economy

Branch	Fixed Capital, End-1967 (Percent)	Amortization Deductions,[1] 1970 (Billion Rubles)
Communal economy and everyday services, total	**100.00**	**0.601**
Water and sewer	51.84	0.312
Electricity and gas	22.00	0.132
Hotels	8.80	0.053
Baths	4.64	0.028
Other	12.72	0.076

[1] The total is distributed by the percentage distribution in column 1.

for other communal and everyday services. Depreciation in recreation, art, and physical culture is derived as 0.091 billion rubles, the sum of amortization deductions for hotels and half of the amortization deductions for other communal and everyday services.

6. Taxes

Taxes of 0.670 billion rubles are the sum of taxes on land and buildings owned by individuals and cooperatives (0.211 billion rubles—*Gosudarstvennyy byudzhet 1966–1970*, p. 77) and local taxes and fees paid by enterprises (0.459 billion rubles—Appendix C, item 3, e). These are assumed to be taxes on gross receipts of movies.

7. Subsidies

Subsidies are estimated in Appendix C, item 4.

8. Total

Derived as the sum of items 1 through 6, less item 7.

G

APPENDIX G

Sources for Table 8. USSR: Gross National Product at Factor Cost, by Sector of Origin, 1970

1. Wage bill

The total wage bill is the sum of the wage bills in the various sectors of the economy and military pay. Wages in the sectors are from Table 7, item 1. Wages of military personnel are estimated at factor cost at 5.944 billion rubles, the sum of military wages (3.320 billion rubles—Table 7, item 1) and the opportunity cost of conscript wages—that is, civilian wages forgone (2.624 billion rubles). The opportunity cost of conscript wages is derived as the product of the number of conscripts in military service in 1970 (2.8 million persons—CIA estimate) and civilian wages forgone (937 rubles per conscript—CIA estimate). The latter is the difference between the estimated annual average wage of conscripts in alternative civilian occupations (1,012 rubles) and the estimated annual average wage of conscripts in military service (75 rubles).

2. Other and imputed income

Total other and imputed income is derived as the sum of other and imputed income in the various sectors and other and imputed income of military personnel. Entries, with the exception of the entry for military personnel, are from Table 7, item 2. Other and imputed income of military personnel is derived as the sum of (1) food and clothing rations of all military personnel at factor cost (1.879 billion rubles—below) and (2) the difference (-1.394 billion rubles) between the food and clothing rations of conscripts in alternative civilian occupations (none) and their ration in the military service at factor cost (1.394 billion rubles—below).

Subsistence of all military personnel at factor cost is derived as the sum of total subsistence in established prices (2.000 billion rubles—Table 7, item 2) and the sum of the factor cost adjustments reflected in the goods and services purchased by the Ministry of Defense (-0.121 billion rubles). The allocation of the sector-of-origin factor cost adjustments to the end-use sectors is presented in Appendix H.

The subsistence ration of conscripts in the military service at factor cost, 1.394 billion rubles, is derived as the difference between the subsistence of conscripts in established prices (1.484 billion rubles—below) and the part of the factor cost adjustment for subsistence allocated to conscript military subsistence (0.090 billion rubles). The share of the factor cost adjustment allocated to conscript subsistence is the ratio of conscript subsistence in established prices to total military subsistence in established prices (74.2%). The subsistence ration of conscripts in established prices (1.484 billion rubles) is based on the number of conscripts in military service (2.8 million—above) and the estimated average cost of subsistence per military member (530 rubles—CIA estimate).

3. Social insurance

The total social insurance charge is derived as the sum of charges to economic enterprises (total and sector data from Table 7, item 3) and the social insurance charge for military personnel that represents the opportunity cost of conscripts in terms of social insurance forgone. The social insurance forgone as a result of the conscription system is derived as the difference between the social insurance that would be charged for conscripts in alternative civilian occupations (0.156 billion rubles) and their social insurance charge in military service (none).

The social insurance charge for conscripts in alternative civilian occupations (0.156 billion rubles) is calculated as the product of (1) the wage bill of conscripts in alternative civilian occupations (2.834 billion rubles—derived by multiplying the number of conscripts in military services by the annual average wage of conscripts in alternative civilian occupations, from 1, above) and (2) a social insurance rate of 5.5%, the rate for state institutions (*Spravochnik partiynogo rabotnika*, p. 440).

4. Charge on fixed capital

The total charge on fixed capital is derived as 70.749 billion rubles, the sum of the charges in the sectors. The charge on fixed capital in each sector is computed as 12% of the sector's annual average fixed capital, net of wear and tear. The rate is the standard minimum rate of return on capital investments (*Ekonomicheskaya gazeta*, no. 39, 1969, p. 11–12). Annual average fixed capital, net of wear and tear, in each sector is derived by reducing annual average fixed capital by the ratio of wear and tear to fixed capital at replacement costs as published in the 1959 official inventory and revaluation of fixed capital. The derivation is as follows:

Sector	Annual Average Fixed Capital,[1] 1970 (Billion Rubles)	Ratio of Wear and Tear to Fixed Capital at Replacement Costs[2] (Percent)	Annual Average Fixed Capital, Net of Wear and Tear,[3] 1970 (Billion Rubles)	Charge on Net Fixed Capital,[4] 1970 (Billion Rubles)
Industry	217.496	25	163.122	19.575
Construction	19.500	27	14.235	1.708
Agriculture	87.500	26	64.750	7.770
Transportation	84.000	29	59.640	7.157
Communications	6.000	30	4.200	0.504
Trade	26.000	26	19.240	2.309
Services	269.000		208.150	24.978
Housing	176.000	23	135.520	16.262
Communal economy and everyday services	28.000	24	21.280	2.554
Education, health, science, art, and other	65.000	21	51.350	6.162
Other branches of material production	1.000	27	0.730	0.088

[1] Derived as the average of end-1969 and end-1970 data in *Narkhoz 1969*, p. 46, and *Narkhoz 1970*, p. 61. For detailed derivation of the industry entry, see Appendix F, Table F-3. The trade entry is identified in the sources as "trade, public dining, material-technical supply, and procurement." The services entry is the sources' data for "nonproductive fixed capital," the sum of nonproductive fixed capital in the three subsectors.

[2] *Narkhoz 1959*, p. 75.

[3] Derived for each entry, with the exception of services (total), as column 1 times (1.00 − column 2). The services entry is derived as the sum of the parts.

[4] Derived as column 3 times 12%.

The total charge on fixed capital in industry is derived as 20.169 billion rubles, the sum of (1) the charge on fixed capital, net of wear and tear (19.575 billion rubles—above) and (2) a charge on the annual average value of warehouse stocks of uninstalled equipment (12% of 4.948 billion rubles, or 0.594 billion rubles). The 1970 annual average value of warehouse stocks of uninstalled equipment is derived from end-1969 and end-1970 data in Appendix D, item 3, a.

The total charge on fixed capital in construction is derived as 7.774 billion rubles, the sum of (1) the charge on fixed capital, net of wear and tear (1.708 billion rubles—above) and (2) a charge on the annual average value of unfinished construction (12% of 50.554 billion rubles, or 6.066 billion rubles). The 1970 annual average value of unfinished construction is derived from end-1969 and end-1970 data in *Narkhoz 1970*, p. 491.

5. Charge on working capital

The total charge on working capital is calculated at 20.413 billion rubles, representing a 12% charge on the annual average value of net working capital (that is, inventories) of 170.109 billion rubles. The annual average value of net working capital is derived from end-1969 and end-1970 inventories data given for state and cooperative organizations in Table G-1 and for collective farms in Appendix D, Table D-3.

The charge on working capital in each sector is calculated as 12% of the sector's annual average value of net working capital (Table G-1). For agriculture the annual average net working capital is derived as 20.312 billion rubles, the sum of the annual average net working capital in state agriculture (10.534 billion rubles—Table G-1) and in collective farms (9.778 billion rubles). The 1970

annual average net working capital in collective farms is derived from end-1969 and end-1970 inventories data in Appendix D, Table D-3.

6. Depreciation

Total depreciation is derived as 40.781 billion rubles, the sum of depreciation in the sectors. Data, with the exception of the entry for services, are from Table 7, item 5. Depreciation in services is estimated at 10.706 billion rubles, the product of the annual average stock of nonproductive fixed capital in 1970 (269 billion rubles—see "services" in the tabulation in 4, above) and an estimated amortization rate of 3.98%. The rate is that implied for 1963 by (1) total depreciation of 7.546 billion rubles on nonproductive fixed capital (*Narkhoz 1964*, p. 585) and (2) an estimated annual average stock of nonproductive fixed capital of 189.363 billion rubles. The estimated stock includes both nonproductive fixed capital in 1963 as identified in *Narkhoz 1963*, p. 55–56, and an allowance for nonproductive fixed capital recorded in transportation and communications stock. This allowance is estimated at 15.526 billion rubles, 30% of the annual average total fixed capital in transportation and communications in 1963 (*Narkhoz 1963*, p. 55–56). The share is that for 1964 calculated from *Narkhoz 1964*, p. 68, and *Voprosy ekonomiki*, no. 5, 1968, p. 61. The total depreciation in services in 1970 includes depreciation in housing and the communal economy of 1.752 billion rubles (Table 7, item 5).

7. Total

Derived as the sum of items 1 through 6. Since the expansion of the industrial and service sectors is needed for GNP estimates over time, this detail is presented for industry in Table G-2 and for services in Table G-3.

Table G-1

USSR: Derivation of Net Working Capital of State and Cooperative Enterprises and Organizations,[1] 1970

Billion Rubles

	Working Capital, End-1969[2]						Working Capital, End-1970[3]								
		Less:						Less:							
	Total	Money Assets	Financial Claims	Other Working Capital	Expenses of Future Periods	Livestock for Fattening and Young Livestock	Equals: Inventories, or Net Working Capital[4]	Total	Money Assets	Financial Claims	Other Working Capital	Expenses of Future Periods	Livestock for Fattening and Young Livestock	Equals: Inventories, or Net Working Capital[4]	Annual Average Net Working Capital,[4] 1970	
Total	**191.389**	**15.502**	**13.014**	**0.766**	**2.826**	**6.405**	**152.876**	**211.837**	**16.523**	**15.676**	**0.847**	**2.940**	**8.065**	**167.786**	**160.331**	**Total**
Industry	71.842	5.101	1.940	0.575	2.628	0	61.598	78.824	5.202	3.153	0.552	2.784	0	67.133	64.366	Industry
Construction[5]	17.032	2.453	4.326	0.034	0.057	0	10.162	19.285	2.546	5.323	0.039	0.053	0	11.324	10.743	Construction[5]
Agriculture[6]	17.918	1.290	0.305	0.054	0.064	6.405	9.800	21.513	1.549	0.387	0.151	0.092	8.065	11.269	10.534	Agriculture[6]
Transportation and communications	5.090	0.412	0.346	0.020	0.043	0	4.269	5.380	0.420	0.398	0.022	0.046	0	4.494	4.382	Transportation and communications
Transportation	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.	N.A	N.A.	N A	N.A.	N.A.	0	N.A.	4.093	Transportation
Communications	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.	0.289	Communications
Trade[7]	68.106	2.724	2.792	0.068	0.114	0	62.408	73.929	2.809	3 031	0.074	0 125	0	67.890	65.149	Trade[7]
Services	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A	0	N.A.	5.142	Services
Other branches	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A	0	N.A.	0 015	Other branches

[1] Net working capital, or inventories, includes (1) commodity-material values (excluding expenses of future periods and livestock for fattening and young livestock) and (2) goods shipped and services performed.

[2] Data for total working capital and working capital in sectors of the economy are from *Narkhoz 1970*, p. 709. Money assets, financial claims, and other working capital are calculated from percentage shares relating these items to the totals (*Ibid.*, p. 710–711). Expenses of future periods and livestock for fattening and young livestock are calculated from percentage shares relating these items to the value of total stocks of commodity-material values in the respective sectors. Shares are from *Narkhoz 1970*: for the total, p. 716; industry, p. 717; agriculture, p. 724; construction, p. 725; and trade, p. 726. The value of stocks of commodity-material values is given in *Narkhoz 1970*, p. 709. Total working capital in transportation and communications is distributed according to the shares obtaining for the economy as a whole.

[3] Data for total working capital and working capital in sectors of the economy are from *Narkhoz 1972*, p. 702. Money assets, financial claims, and other working capital are calculated from percentage shares relating these items to the totals (*Ibid.*, p. 703–704). Expenses of future periods and livestock for fattening and young livestock are calculated from percentage shares relating these items to the value of total stocks of commodity-material values in the respective sectors. Shares are from *Narkhoz 1972*: for the total, p. 710; industry, p. 711; agriculture, p. 718; construction, p. 719; and trade, p. 720. The value of stocks of commodity-material values is given in *Narkhoz 1972*, p. 702. Total working capital in transportation and communications is distributed according to the shares obtaining for the economy as a whole.

[4] Derived for each entry, with the exceptions of transportation, communications, services, and other branches of material production, as the average of end-1969 and end-1970 net working capital. The joint entry for transportation and communications is allocated 93.4% to transportation and 6.6% to communications on the basis of the sectors' shares in the total annual average stock of fixed capital, net of wear and tear, in the two sectors in 1970. (See Appendix G, item 4.) The column's residual—derived as the difference between the total and the sum of the entries for industry, construction, agriculture, transportation, communications, and trade—is allocated 99.7% to services and 0.3% to "other branches of material production" on the basis of the sectors' shares in the total annual average stock of fixed capital, net of wear and tear, in the two sectors in 1970. (See Appendix G, item 4.)

[5] Contract organizations.

[6] State farms and other state agricultural enterprises.

[7] Trade, supply and sales, and procurement.

Table G-2

USSR: Gross National Product Originating in Industry, at Factor Cost,[1] 1970

Billion Rubles

	(1) State Wage Bill	(2) Other and Imputed Income	(3) Social Insurance	(4) Charge on Fixed Capital	(5) Charge on Working Capital	(6) Depreciation	(7) Total
Industry, total	48.849	2.200	3.531	20.169	7.724	15.006	97.479
Electric power	1.050	0.047	0.069	3.103	0.093	2.386	6.748
Petroleum produets and gas	0.652	0.051	0.055	1.409	0.062	1.081	3.310
Coal	3.004	0.066	0.270	1.076	0.131	0.825	5.372
Nonferrous metals	1.372	0.072	0.108	1.018	0.309	0.780	3.659
Chemicals	2.575	0.124	0.216	1.744	0.278	1.336	6.273
Machine building and metalworking	19.180	0.521	1.476	4.491	2.657	2.986	31.311
Ferrous metals	2.502	0.138	0.198	2.026	0.348	1.561	6.773
Forest products	4.175	0.106	0.196	0.675	0.409	0.510	6.071
Pulp and paper	0.406	0.016	0.019	0.294	0.178	0.225	1.138
Construetion materials	3.714	0.098	0.227	1.301	0.216	1.005	6.561
Light industry	5.099	0.356	0.346	0.881	1.344	0.675	8.701
Processed foods	4.125	0.522	0.280	1.673	1.429	1.276	9.305
Other industry	0.995	0.083	0.071	0.478	0.270	0.360	2.257

[1] Sources:

1. State wage bill

Appendix F, Table F-1, item 1.

2. Other and imputed income

Appendix F, Table F-1, item 2.

3. Social insurance

Appendix F, Table F-1, item 3.

4. Charge on fixed capital

The total charge on fixed capital in industry is derived as 20.169 billion rubles in Appendix G, item 4. The charge on fixed capital in each branch of industry is calculated as 12% of the branch's annual average fixed capital, net of wear and tear. (For annual average net stock data, see Appendix F, Table F-3, column 6.) The total charge on fixed capital in MBMW is derived as 4.491 billion rubles, the sum of (1) 3.897 billion rubles, the charge on fixed capital, net of wear and tear, computed as explained above and (2) 0.594 billion rubles, representing a 12% charge on the annual average value of warehouse stocks of uninstalled equipment. (See Appendix G, item 4.)

5. Charge on working capital

The total charge on working capital in industry is calculated as 7.724 billion rubles (Table 8, item 5, and Appendix G, item 5). The distribution of charges by branch of industry is based on the percentage distribution of stocks of commodity-material values by branch of industry at end-1960. The derivation follows in next column.

6. Depreciation

Appendix F, Table F-1, item 5.

7. Total

Derived as the sum of items 1 through 6.

Distribution of the Charge on Working Capital by Branch of Industry (Item 5, continued)

Branch	Stocks of Commodity-Material Values in Industry, End-1960: Billion Rubles[1]	Stocks of Commodity-Material Values in Industry, End-1960: Percent	Charge on Working Capital in Industry, 1970 (Billion Rubles)[2]
Total	29.015	100.0	7.724
Electric power	0.358	1.2	0.093
Petroleum produets and gas	0.244	0.8	0.062
Coal	0.484	1.7	0.131
Nonferrous metals	1.156	4.0	0.309
Chemicals	1.042	3.6	0.278
Machine building and metalworking	9.967	34.4	2.657
Ferrous metals	1.315	4.5	0.348
Forest produets	1.543	5.3	0.409
Pulp and paper	0.661	2.3	0.178
Construction materials	0.819	2.8	0.216
Light industry	5.032	17.4	1.344
Processed foods	5.374	18.5	1.429
Other industry	1.020	3.5	0.270

[1] The total is given in *Narkhoz 1972*, p. 702. The branch data, with the exceptions of entries for forest produets, pulp and paper, and "other industry," are from *Planovoye khozyaystvo*, no. 9, 1962, p. 45. The journal article's joint entry for forest products and paper is allocated 70% to forest products and 30% to pulp-paper on the basis of the branches' approximate shares in the total annual average fixed capital, net of wear and tear, in the two branches. (See Appendix F, Table F-3, column 6.) The entry for "other industry" is derived as the column's residual entry.

[2] The total is distributed among the branches by the percentage distribution in column 2.

Table G-3

USSR: Gross National Product Originating in Services, at Factor Cost,[1] 1970

Billion Rubles

	(1) State Wage Bill	(2) Other and Imputed Income	(3) Social Insurance	(4) Charge on Fixed Capital	(5) Charge on Working Capital	(6) Depreciation	(7) Total
Services, total	32.779	3.510	2.103	24.978	0.617	10.706	74.693
Housing	1.766	2.037	0.083	16.262	0.402	6.970	27.520
Utilities	0.590	0	0.028	1.886	0.047	0.806	3.357
Repair and personal care	2.249	0.843	0.146	0.280	0.007	0.120	3.645
Recreation, art, and physical culture	0.861	0.484	0.047	0.388	0.009	0.166	1.955
Education	9.333	0.093	0.513	2.231	0.055	0.957	13.182
Health	5.319	0.053	0.292	1.238	0.031	0.531	7.464
Science (R&D)	5.316	0	0.292	2.083	0.051	0.894	8.636
Credit and insurance	0.519	0	0.029	N.A.	N.A.	N.A.	0.548
Government administrative and miscellaneous services	6.306	0	0.328	0.610	0.015	0.262	7.521
General agricultural programs	0.722	0	0.032	N.A.	N.A.	N.A.	0.754
Forest economy	0.525	0	0.023	N.A.	N.A.	N.A.	0.548
Apparat	2.499	0	0.137	N.A.	N.A.	N.A.	2.636
Culture	0.856	0	0.047	0.610	0.015	0.262	1.790
Municipal services	0.454	0	0.021	N.A.	N.A.	N.A.	0.475
Civilian police	0.988	0	0.054	N.A.	N.A.	N.A.	1.042
Administrative organs of social organizations	0.262	0	0.014	N.A.	N.A.	N.A.	0.276
Statistical discrepancy	0.520	Not app.	0.345	Not app.	Not app.	Not app.	0.865

[1] Sources:

1. State wage bill

Appendix F, Table F-4, item 1.

2. Other and imputed income

Appendix F, Table F-4, item 2.

3. Social insurance

Appendix F, Table F-4, item 3.

4. Charge on fixed capital

The total charge on fixed capital in services is derived in Appendix G, item 4, as 24.978 billion rubles, the sum of charges on fixed capital, net of wear and tear, in (1) housing (16.262 billion rubles); (2) communal economy and everyday services (2.554 billion rubles); and (3) education, health, science, art, and other (6.162 billion rubles). The distribution of charges by category of services within (1) communal economy and everyday services and (2) education, health, science, art, and other is based on the percentage distribution of the estimated 1970 annual average stock of fixed capital, net of wear and tear, for these areas. The derivation follows on p. 87.

The charge on fixed capital in utilities is derived as the sum of the charges in water and sewer and electricity and gas. The repair and personal care entry is derived as the sum of the charge on fixed capital in baths and half of the charge in "other communal and everyday services." The recreation, art, and physical culture entry is derived as the sum of the charge in hotels and half of the charge in "other communal and everyday services."

5. Charge on working capital

The total charge on working capital in services is calculated as 0.617 billion rubles (Table 8, item 5, and Appendix G, item 5). In the absence of other information, the distribution of charges by category of services is based arbitrarily on the percentage distribution of the estimated 1970 annual average stock of fixed capital, net of wear and tear, in services as presented in item 4, p. 87. As was the case with the charge on fixed capital, the utilities entry is the sum of water and sewer and electricity and gas; the repair and personal care entry is the sum of baths and half of the entry for "other communal and everyday services"; and the recreation, art, and physical culture entry is the sum of hotels and half of the entry for "other communal and everyday services."

6. Depreciation

Depreciation in services is derived as 10.706 billion rubles in Appendix G, item 6. The distribution of depreciation by category of services is based on the percentage distribution of the estimated 1970 annual average stock of fixed capital, net of wear and tear, in services as presented in item 4, p. 87. Again, depreciation in utilities is the sum of depreciation of water and sewer and electricity and gas; depreciation in repair and personal care is the sum of depreciation of baths and half of the entry for "other communal and everday services"; and depreciation in recreation, art, and physical culture is the sum of depreciation of hotels and half of the entry for "other communal and everyday services."

7. Total

Derived as the sum of items 1 through 6.

Distribution of the Charge on Net Fixed Capital in Services by Category of Services (Item 4, above, continued)

Branch	Estimated Annual Average Fixed Capital, Net of Wear and Tear, 1970			Charge on Net Fixed Capital, 1970 (Billion Rubles)[4]
	Billion Rubles[1]	Percent[2]	Percent[3]	
Services	**208.150**	**100.0**		**24.978**
Housing	135.520	65.1		**16.262**
Communal economy and everyday services	21.280	10.2	**100.00**	**2.554**
Water and sewer			51.84	1.324
Electricity and gas			22.00	0.562
Hotels			8.80	0.225
Baths			4.64	0.118
Other			12.72	0.325
Education, health, science, art, and other nonproductive branches	51.350	24.7	**100.0**	**6.162**
Education			36.2	2.231
Health			20.1	1.238
Science and other			33.8	2.083
Culture			9.9	0.610

[1] Appendix G, item 4.

[2] Column 1 expressed in percent.

[3] The percentage distribution of fixed capital in the communal economy and everyday services is that for local soviets of the RSFSR at end-1967. (See Appendix F, Table F-4, item 5.) The percentage distribution of fixed capital in education and the like is calculated from the value of nonproductive fixed assets at end-1970 as given in *Planovoye khozyaystvo*, no. 6, 1972, p. 69. The source's entry for "other branches" is attributed wholly to science; the entry for "culture," though apparently inclusive of "art," is attributed wholly to culture.

[4] All entries are from Appendix G, item 4, with the exceptions of the entries for categories within (1) the communal economy and everyday services and (2) education, health, science, art, and other nonproductive branches. The total entries for these two areas are distributed by the appropriate percentage distribution in column 3.

H

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APPENDIX H

Sources for Table 9. USSR: Gross National Product at Factor Cost, by End Use, 1970

1. GNP in established prices

Table 6.

2–9. Factor cost adjustments transferred from originating sectors

The total factor cost adjustment originating in each sector is derived in Table H-1. The total for industry is shown in Table 9 as the sum of items 2 and 3 of the first row. The totals for the nonindustrial sectors are shown in Table 9, items 4 through 9 of the first row.

Factor cost adjustments can affect end-use values directly or indirectly. A direct effect is one in which the adjustment can be shifted in full from the sector of its origin to the value of the same sector's final output. For example, a price markup (an indirect tax) on TV sets arises in the MBMW sector and can be directly transferred to the final output of MBMW, the retail sales of TV sets. In this example, the direct factor cost adjustment would be made by subtracting 0.510 billion rubles (the price markups on radio and TV sets—Appendix C, item 3, e) from both GNP originating in MBMW and from the consumption of durables in GNP by end use.

An indirect factor cost adjustment is one that causes a change in the value of output of a sector, whether sold to other sectors or to final end users. Since most sectors are interrelated, a factor cost adjustment in one sector will affect the factor cost prices of many sectors and hence the value of their deliveries to end-use components at factor cost. For example, if the food industry were not subsidized, it would have to raise its prices; all sectors that purchase food as an intermediate input would have to raise their prices; and eventually the prices of all goods would be increased. The calculation of the impact of an indirect factor cost adjustment on the end-use components requires a distribution of all intermediate production. For this purpose, we estimated an 18-sector Soviet I-O table for 1970. The table was derived from the 1966 reconstructed input-output table (Treml, *et al., Conversion of Soviet Input-Output Tables to Producers' Prices: The 1966 Reconstructed Table, op. cit.*) and estimates of gross output and value added in 1970 for the 18 sectors.

The direct factor cost adjustment in industry is 38.208 billion rubles, the sum of explicit turnover tax (37.698 billion rubles) and price markups on radio and television sets (0.510 billion rubles). Explicit turnover tax is derived as total turnover tax, 49.380 billion rubles (Table 3, item 3, d) less implicit turnover tax, 11.682 billion rubles (Table H-1, item 2). (Implicit turnover tax is that collected from interindustrial sales and is included in retail prices only indirectly.) The explicit tax is subtracted from the components of end use at established prices according to an estimated distribution of each sector's sales to the end-use components. First, it is assumed that the distribution of each sector's sales to private consumption, public consumption, and inventories is the same as in the 1966 reconstructed Soviet input-output table. Second, the consumption totals were distributed among various categories of consumption. For example, the explicit turnover tax collected on electric power delivered to private consumption was allocated to utilities. The price markups on radio and television sets were allocated to the consumption of durables (Table 6, item 1, a, (3)). Item 2 of Table 9 shows the results of these calculations.

Direct factor cost adjustments originating in sectors other than industry (Table H-1, item 8) are indirect taxes in agriculture (0.080 billion rubles), indirect taxes in trade (0.063 billion rubles), profits and capital charges in nonproductive transportation and communications (1.138 billion rubles), and the factor cost adjustment in services—including the adjustment to the value of services of military personnel (−35.352 billion rubles). At this point, it should be noted that factor cost

adjustments are *subtracted* from values for components of GNP in established prices. Therefore, a negative factor cost adjustment will raise the value of GNP at factor cost above the value of GNP in established prices. The indirect taxes in agriculture are allocated entirely to the private consumption of food and are reflected in that row of Table 9, item 5. The indirect taxes in trade are allocated entirely to general administrative and miscellaneous services and are included in that row of Table 9, item 6. The direct factor cost adjustments in transportation and communications are included in the personal transportation and personal communications rows of Table 9, item 7. The factor cost adjustments in services (Table F-4, item 8, less Table G-3, item 7) are entered in the respective rows of Table 9, item 8. The adjustment for military personnel (Table 7, item 8, less Table 8, item 7) is entered in the outlays n.e.c. row of Table 9, item 8, because this category includes this category of defense spending.

The indirect factor cost adjustments in industry, construction, agriculture, trade, transportation, communications, and other branches of material production result from substituting capital charges for profits, adding subsidies, and subtracting implicit turnover tax paid. The allocation to the end-use components is accomplished in two steps. First, the estimated 1970 input-output table is used to transfer the adjustments originating directly or indirectly in each sector of origin to sectoral sales to final demand. Second, the total end-use adjustment applicable to each sector's sales to final demand is allocated among its components.

The principal assumption used in the first step is that any change in a sector's costs is passed on to all purchasers of that sector's output. Thus, if the amount of a sector's indirect factor cost adjustment is 10% of the value of its total output, the value of its deliveries to all sectors (including itself) is reduced by 10%. When this is done for all 18 sectors in the input-output table, a part of the adjustment is passed on to each sector's sales to end use, but the remainder is passed on to the 18 sectors in the input-output table. This creates a new set of cost changes, which must be passed on as was the original set of indirect factor cost changes. This process continues iteratively until the entire indirect factor cost adjustment is transferred to end-use components.

Mathematically, this entire process can be computed in one equation:

(1) $G = B'G + V$

where,

G is a vector of gross outputs,

V is a vector of value addeds,

B is a matrix of output coefficients, computed as:

$b_{ij} = x_{ij}/g_i$

where,

x_{ij} is the sales of sector i to sector j,

B′ is the transpose of the B matrix.

Equation (1) is solved for G as,

(2) $G = (I - B')^{-1}(V)$

where,

I is an identity matrix with ones on the diagonal and zeros elsewhere.

To compute the change in gross output due to the indirect factor cost adjustment equation, (2) can be adapted as,

(3) $\Delta G = (I - B')^{-1}(\Delta V)$

where,

ΔV is the vector of indirect factor cost adjustments for each sector,

ΔG is the vector of changes in gross output resulting from ΔV.

Since the B matrix preserves the distribution of output, the ratio of final demand (end use) to gross output is constant. Thus, the change in final demand is calculated as,

(4) $\Delta F = (F/G)(\Delta G) = (F/G)(I - B')^{-1}(\Delta V)$

where,

F/G is a vector of ratios of final demand to gross output in the 1970 input-output table,

ΔF is the vector of changes in final demand resulting from ΔV.

In the second step the total change in each sector's final sales (ΔF) is allocated among the end-use components. This is accomplished by constructing an end-use matrix. The matrix has 18 rows, one for each sector in the input-output table, and one column for each end-use component. The matrix is based on the 1966 input-output table and other information for 1966, and these relationships were assumed to be the same in 1970 as in 1966. Mathematically, the i^{th} row of the matrix is multiplied by the i^{th} element of the ΔF vector. The results of these computations are shown in Table 9, items 3 through 7. Items 5 and 6 (agriculture and

trade) include some indirect taxes, and item 7 includes the direct factor cost adjustment of transportation and communications as indicated above.

Item 9 of Table 9 shows the fairly arbitrary distribution of the factor cost adjustment originating from the unallocated income (21.469 billion rubles). This is treated as an indirect factor cost adjustment. First, it is distributed to industry, construction, agriculture, transportation, communications, trade, and other branches using the sum of wages, other and inputed income, social insurance, profits, and depreciation as weights. The amount given to each sector is then transferred to the end-use components as though it were an indirect factor cost adjustment arising in that sector.

10. Total factor cost adjustment

The sum of items 2 through 9.

11. GNP at factor cost

Item 1 less item 10.

Table H-1

USSR: Factor Cost Adjustment, by Originating Sector,[1] 1970

Billion Rubles

	(1) Turnover and Other Indirect Taxes	(2) Implicit Turnover Tax Collected	(3) Profits Less Capital Charges	(4) Depreciation	(5) Wages, Social Insnrance, and Other Income	(6) Subsidies	(7) Implicit Turnover Tax Paid	(8) Direct Factor Cost Adjustment	(9) Indirect Factor Cost Adjustment	(10) Total
Total	72.172	11.682	−2.008	−8.954	−1.265	−19.454	11.682	4.137	36.354	40.491
Industry	49.890	11.682	24.080	0	0	−14.330	9.341	38.208	19.091	57.299
Construction	0	0	−4.685	0	0	0	0.575	0	−4.110	−4.110
Agriculture	0.080	0	2.341	0	0	−1.342	0.866	0.080	1.865	1.945
Transportation and communications	0	0	2.558	0	0	0	0.698	1.138	2.118	3.256
Transportation	0	0	2.301	0	0	0	....	0.920	....	....
Communications	0	0	0.257	0	0	0	....	0.218	....	....
Trade and other branches	0.063	0	−3.761	0	0	−0.520	0.202	0.063	−4.079	−4.016
Services and military personnel	0.670	0	−22.541	−8.954	−1.265	−3.262	0	−35.352	0	−35.352
Unallocated	21.469	0	0	0	0	0	0	0	21.469	21.469

[1] Sources:

1. Turnover and other indirect taxes

Table 7, item 6.

2. Implicit turnover tax collected

Implicit turnover tax is derived from the distribution of total turnover tax by collecting sector (see Table F-1, notes to item 6) and the ratios of implicit to total turnover tax in the collecting sectors in 1966. The 1966 ratios are taken from the 1966 reconstructed input-output table (Treml, *et al.*, *Conversion of Soviet Input-Output Tables to Producers' Prices: The 1966 Reconstructed Table, op. cit.*, p. 109–110).

3. Profits less capital charges

Derived as the difference between item 4 of Table 7 and the sum of items 4 and 5 in Table 8.

4. Depreciation

Derived as the difference between Table 7, item 5, and Table 8, item 6.

5. Wages, social insurance, and other income

Derived as the difference between the sum of items 1 through 3 of Table 7 and the sum of items 1 though 3 of Table 8.

6. Subsidies

Table 7, item 7.

7. Implicit turnover tax paid

Implicit turnover tax collected by each branch of industry was redistributed to the sectors that paid implicit turnover tax by means of a methodology similar to that used for 1966 in Treml, *et al.*, (*Ibid.*). This methodology can be summarized as assuming that turnover tax is paid at the same rate by all purchasers except for certain intraindustrial sales. Thus, total interindustrial sales were computed from the reconstructed 1966 input-output table in producers' prices, and from this total the major intraindustrial sales not subject to tax were subtracted. The total implicit turnover tax collected in each sector was then distributed according to the distribution of these interindustrial sales subject to tax in 1966. Implicit turnover tax paid by each sector could then be computed as the sum paid on the purchases from each sector. The implicit turnover tax paid by transportation and communications is a total; the division between the sectors was not estimated.

8. Direct factor cost adjustment

The direct factor cost adjustment for industry, construction, agriculture, and trade and other branches is item 1 less item 2. The services and military personnel entry is the sum of items 1 through 7. The direct factor cost adjustment in transportation and communications represents the nonproductive share of profits and capital charges according to the Soviet concept of productive and nonproductive activity. The nonproductive share of profits and capital charges in transportation is estimated as 40%, based on the methodology of R. Campbell ("A Shorthand Method for Estimating Soviet GNP." *The ACES Bulletin*, Vol. XIV, no. 2, Fall 1972, p. 33). The nonproductive share of profits and capital charges in communications is estimated as 85%, based on the nonproductive share of employment in communications. (See V. Ye. Kozak, *Proizvoditel'nyy i neproizvoditel'nyy trud*, Kiev, 1971, p. 138.)

9. Indirect factor cost adjustment

The indirect factor cost adjustment for industry, construction, agriculture, and trade and other branches is derived as the sum of items 3 through 7. The indirect factor cost adjustment for transportation and communications is the sum of the implicit turnover tax paid (item 7) and the productive shares of profits and capital charges (see above). All of the unallocated indirect taxes are assumed to represent an indirect factor cost adjustment.

10. Total

Derived as the sum of items 8 and 9.